

# EXHIBIT B

CONFIDENTIAL

IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF TEXAS  
HOUSTON DIVISION

-----x  
In re ANADARKO PETROLEUM Civil Action No.  
CORPORATION SECURITIES 4:20-cv-00576  
LITIGATION  
-----x

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REMOTE VIDEOTAPED DEPOSITION BY VIRTUAL ZOOM OF  
ROCCO DETOMO, JR., Ph.D.  
Thursday, March 9, 2023

Reported By: Lynne Ledanois, CSR 6811  
Job No. 5781021

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| 1  | IN THE UNITED STATES DISTRICT COURT                  | 1  | REMOTE APPEARANCES            |
| 2  | FOR THE SOUTHER DISTRICT OF TEXAS                    | 2  |                               |
| 3  | HOUSTON DIVISION                                     | 3  | ALSO PRESENT:                 |
| 4  | -----x   | 4  | John MacDonnell, Videographer |
| 5  |  | 5  | Kallie Gallagher, Occidental  |
| 6  | In re ANADARKO PETROLEUM Civil Action No.            | 6  | Lyndon Pittinger              |
| 7  | CORPORATION SECURITIES 4:20-cv-00576                 | 7  |                               |
| 8  | LITIGATION   | 8  |                               |
| 9  | -----x   | 9  |                               |
| 10 |  | 10 |                               |
| 11 |  | 11 |                               |
| 12 | Videotaped deposition of ROCCO DETOMO, JR.,          | 12 |                               |
| 13 | Ph.D., taken in Indianalantic, Florida commencing at | 13 |                               |
| 14 | 11:34 a.m. EST on Thursday, March 9, 2023 before     | 14 |                               |
| 15 | Lynne Ledanois, Certified Shorthand Reporter No.     | 15 |                               |
| 16 | 6811   | 16 |                               |
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| 3  | Counsel for the Lead Plaintiffs:                     | 3  | Examination by: Page          |
| 4  | ROBBINS GELLER RUDMAN & DOWD LLP                     | 4  | Ms. Jensen 10                 |
| 5  | BY: RACHEL JENSEN                                    | 5  | Ms. Phillips 248              |
| 6  | RAFFI FRIEDMAN                                       | 6  |                               |
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| 16 | BY: LAUREN PHILLIPS                                  | 16 |                               |
| 17 | CHARLES BLOOM  | 17 |                               |
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| 19 | Attorneys at Law                                     | 19 |                               |
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| 24 |  | 24 |                               |
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| 1  | Thursday, March 9, 2023                             |         |
| 2  | 11:34 a.m. EST                                      |         |
| 3  | -----   |         |
| 4  | THE VIDEOGRAPHER: We're on the record.              |         |
| 5  | It's 11:34 a.m. Eastern time on March 9th, 2023.    | 11:34AM |
| 6  | This is the deposition of Dr. Rocco Detomo, Junior. |         |
| 7  | We're here in the matter of Anadarko                |         |
| 8  | Petroleum Corporation securities litigation.        |         |
| 9  | I'm John McDonnell, the videographer with           |         |
| 10 | Veritext.   | 11:35AM |
| 11 | Before the reporter swears the witness,             |         |
| 12 | would counsel please identify themselves beginning  |         |
| 13 | with the noticing attorney.                         |         |
| 14 | MS. JENSEN: Good morning. This is Rachel            |         |
| 15 | Jensen from Robbins Geller Rudman & Dowd on behalf  | 11:35AM |
| 16 | of plaintiffs in the class. With me this morning    |         |
| 17 | and today are Raphaella Friedman and Nicole         |         |
| 18 | Gilliland.  |         |
| 19 | MS. PHILLIPS: Good morning. This is                 |         |
| 20 | Lauren Phillips of Cravath Swaine & Moore for the   | 11:35AM |
| 21 | defendants. With me are my colleagues Benjamin      |         |
| 22 | Gruenstein and Charles Bloom of my firm and Kallie  |         |
| 23 | Gallagher of Occidental.                            |         |
| 24 | ROCCO DETOMO, JR., Ph.D.,                           |         |
| 25 | having been duly sworn, testified as follows:       | 11:35AM |
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| <p>1 EXAMINATION 11:35AM</p> <p>2 BY MS. JENSEN:</p> <p>3 Q Good morning, Dr. Detomo. Where are you</p> <p>4 physically located today?</p> <p>5 A Physically located at my residence in 11:36AM</p> <p>6 Florida on the East Coast just south of Cape</p> <p>7 Canaveral.</p> <p>8 Q Is anybody else in the room with you?</p> <p>9 A No.</p> <p>10 Q Do you have any documents in reach? 11:36AM</p> <p>11 A The only document I have is a written copy</p> <p>12 of my report.</p> <p>13 Q Is that a clean copy?</p> <p>14 A Yes, it is.</p> <p>15 Q Any other documents? 11:36AM</p> <p>16 A No.</p> <p>17 Q And have you removed all technology not</p> <p>18 needed for this deposition today?</p> <p>19 A Yes, I believe so.</p> <p>20 Q Okay. Have you ever been deposed before? 11:36AM</p> <p>21 A Yes.</p> <p>22 Q How often or how many times?</p> <p>23 A Twice.</p> <p>24 Q And what occasion were those depositions?</p> <p>25 A One occasion was in defense of a case with a 11:36AM</p> <p style="text-align: right;">Page 10</p>   | <p>1 service providers that provide ocean bottom seismic 11:38AM</p> <p>2 capability.</p> <p>3 Q And what was the nature of your opinion in</p> <p>4 that case?</p> <p>5 A The nature of my opinion was to -- whether 11:38AM</p> <p>6 or not the one design and implementation infringed</p> <p>7 upon the patent of the other.</p> <p>8 Q And was your testimony admitted in that</p> <p>9 case?</p> <p>10 A I don't know the current resolution of that 11:39AM</p> <p>11 case. I have not heard anything for approximately one</p> <p>12 year.</p> <p>13 Q So you don't know one way or the other?</p> <p>14 A Correct.</p> <p>15 Q The patent case that you mentioned, was 11:39AM</p> <p>16 that -- I may mispronounce this, Magseis FF LLC</p> <p>17 versus Seabed Geosolutions U.S. Inc.?</p> <p>18 A Yes. And it's Magseis.</p> <p>19 Q Thank you. You did have your deposition</p> <p>20 taken in that case; correct? 11:39AM</p> <p>21 A Yes.</p> <p>22 Q And you told the truth in that deposition;</p> <p>23 correct?</p> <p>24 A Yes.</p> <p>25 Q That was not a securities fraud case; 11:40AM</p> <p style="text-align: right;">Page 12</p> |
| <p>1 drilling contractor, turnkey drilling contractor with 11:37AM</p> <p>2 Shell. And the other was a case associated with a</p> <p>3 patent suit.</p> <p>4 Q Were you a percipient witness or an expert</p> <p>5 witness in the drilling contractor case? 11:37AM</p> <p>6 A I believe it was an expert witness because I</p> <p>7 had not participated in the drilling of the well.</p> <p>8 Q And what party did you appear on behalf</p> <p>9 of?</p> <p>10 A On behalf of Shell Oil. 11:37AM</p> <p>11 Q You used to work for Shell Oil; correct?</p> <p>12 A Yes.</p> <p>13 Q What is the name of that case?</p> <p>14 A I do not recall. It was in the early 1990s.</p> <p>15 Q What was the nature of your opinion? 11:38AM</p> <p>16 A Nature of my opinion was a technical</p> <p>17 evaluation as to whether or not the well had</p> <p>18 penetrated salt.</p> <p>19 Q And was your testimony admitted in that</p> <p>20 case? 11:38AM</p> <p>21 A The case was settled out of court the day</p> <p>22 before it was to go to trial.</p> <p>23 Q You mentioned another case. What was the</p> <p>24 patent case?</p> <p>25 A It was a patent lawsuit between two seismic 11:38AM</p> <p style="text-align: right;">Page 11</p> | <p>1 right? 11:40AM</p> <p>2 A No.</p> <p>3 Q Neither was the other contractor drilling</p> <p>4 case?</p> <p>5 A No. 11:40AM</p> <p>6 Q Your opinions have never been admitted in</p> <p>7 a securities fraud case; correct?</p> <p>8 A Correct.</p> <p>9 Q Did you prepare for this deposition?</p> <p>10 A I reread certain sections of my report, so 11:40AM</p> <p>11 yes.</p> <p>12 Q Did you meet with anyone?</p> <p>13 A Yes.</p> <p>14 Q And who did you meet with?</p> <p>15 A I met with some of the Cravath lawyers. 11:40AM</p> <p>16 Q And which lawyers did you meet with?</p> <p>17 A I met with Lauren Phillips, Charles Bloom</p> <p>18 and -- principally. I think Mr. Ben Gruenstein</p> <p>19 actually sat in on part of it.</p> <p>20 Q How long did you meet with the Cravath 11:41AM</p> <p>21 folks?</p> <p>22 A You mean in preparation for this?</p> <p>23 Q Yes.</p> <p>24 A I met twice, both times for a few hours.</p> <p>25 Q And when did you meet with them? 11:41AM</p> <p style="text-align: right;">Page 13</p>   |

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| <p>1 A I believe last Friday. I would have to 11:41AM<br/> 2 check to be absolutely sure, but I believe last Friday<br/> 3 and then the Friday before.<br/> 4 Q So you met with them on -- it would be<br/> 5 Friday, February 24th and March the 3rd? 11:41AM<br/> 6 A To the best of my recollection, that was the<br/> 7 two days.<br/> 8 Q You said a couple of hours each. How much<br/> 9 time total did you meet with the attorneys?<br/> 10 A So I would say between -- for those two 11:42AM<br/> 11 meetings, the total was between four and six hours.<br/> 12 Q You mentioned that you reviewed or<br/> 13 rereviewed portions of your report. Is there<br/> 14 anything in your report you would like to withdraw<br/> 15 or modify? 11:42AM<br/> 16 A No.<br/> 17 Q You stand by your report in its entirety?<br/> 18 A Yes.<br/> 19 Q Is there any further work you intend do?<br/> 20 A Not that I am aware of. I'm not aware of 11:42AM<br/> 21 any other work that I have been asked to perform in<br/> 22 the future.<br/> 23 Q Any opinions you intend to offer at trial<br/> 24 other than those set forth in your report?<br/> 25 A There are no opinions I intend to offer that 11:42AM<br/> Page 14</p> | <p>1 A Well, Anadarko Corporation was bought by 11:44AM<br/> 2 Occidental Corporation.<br/> 3 Q And do you know whether Occidental is a<br/> 4 named defendant in this case?<br/> 5 A I'm assuming they are because they inherit 11:44AM<br/> 6 that liability. So I'm assuming that the current<br/> 7 defendant is Occidental.<br/> 8 Q Do you know who the other defendants are?<br/> 9 A I believe there were some individual<br/> 10 defendants who were actually employees of Anadarko at 11:44AM<br/> 11 the time, but I could not -- I would recognize a few<br/> 12 of them, but I would not be able to recite the entire<br/> 13 list.<br/> 14 Q Do you know any of those individuals?<br/> 15 A Personally, no. 11:45AM<br/> 16 Q Any other capacity?<br/> 17 A No, I've never run into them work wise or<br/> 18 otherwise.<br/> 19 Q You worked with Occidental before?<br/> 20 A Not closely and not in a partnership. But I 11:45AM<br/> 21 do know or have occasion to have been acquaintances<br/> 22 with people who have worked at Occidental.<br/> 23 Q And who is that?<br/> 24 A I'm trying to recall their names.<br/> 25 There's -- I don't recall names offhand, but I know 11:45AM<br/> Page 16</p> |
| <p>1 are different than the ones in my report. 11:42AM<br/> 2 Q I take it that you've read Dr. Merrill and<br/> 3 Mr. Pittinger's reports. Have you read any other<br/> 4 expert reports in this case?<br/> 5 A Those are the only two expert reports I've 11:43AM<br/> 6 read.<br/> 7 Q When were you retained in this case?<br/> 8 A I was retained in this case I believe a<br/> 9 little over a year ago.<br/> 10 Q So in 2022, approximately what month? 11:43AM<br/> 11 A I would guess February, but I would have to<br/> 12 check records to be sure.<br/> 13 Q Do you know who the defendants are in the<br/> 14 case?<br/> 15 A I know that the title on the defendants is 11:43AM<br/> 16 Georgia Firefighters Fund, which I am assuming is a<br/> 17 company that represents investments. But that's all I<br/> 18 know about it.<br/> 19 Q Okay. So just to be clear, the suing<br/> 20 party is the plaintiffs; right? Who were the 11:43AM<br/> 21 defendants in the case?<br/> 22 A Oh, the defendants, sorry. The defendants<br/> 23 in this case were originally Anadarko Corporation.<br/> 24 Q Are you saying that it's a different<br/> 25 defendant now? 11:44AM<br/> Page 15</p>                         | <p>1 there are people I've met at industry conferences who 11:45AM<br/> 2 have had conversations -- worked at Occidental.<br/> 3 Q How many hours have you spent on this<br/> 4 case?<br/> 5 A Again, I would have to make an estimate 11:46AM<br/> 6 without checking records, but my estimate off the top<br/> 7 of my head would be between 400 and 600 hours.<br/> 8 Q How many of those hours did you spend on<br/> 9 your report?<br/> 10 A I would guess two-thirds of those hours were 11:46AM<br/> 11 on the report.<br/> 12 Q How much have you been paid by defendants<br/> 13 in this case?<br/> 14 A I'm paid by the hour at the rate of \$300 per<br/> 15 hour. 11:46AM<br/> 16 Q And so what is the total?<br/> 17 A Let's see. So 400 times 300 would be<br/> 18 \$120,000.<br/> 19 Q Do you have any outstanding invoices?<br/> 20 A Yes. 11:47AM<br/> 21 Q And in what amount?<br/> 22 A I believe it's \$1500.<br/> 23 Q If you'll bear with me, I'm going to mark<br/> 24 an exhibit here. Okay.<br/> 25 Dr. Detomo, you should be able to see what 11:47AM<br/> Page 17</p>  |

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| <p>1 I've marked as Exhibit 527. I'm hoping that you 11:47AM<br/>2 will recognize this document.<br/>3 (Whereupon, Exhibit 527 was marked for<br/>4 identification.)<br/>5 THE WITNESS: I just clicked in Veritext, 11:48AM<br/>6 I see the document. Let me open it.<br/>7 At least the cover page appears to be the<br/>8 cover page of my report.<br/>9 BY MS. JENSEN:<br/>10 Q And that's your name on the front page of 11:48AM<br/>11 the report?<br/>12 A Yes, it is.<br/>13 Q Could you scroll through just briefly --<br/>14 if you read the whole thing, we'll probably just<br/>15 spend the whole day on this one question, so let's 11:48AM<br/>16 not do that.<br/>17 If you can just scroll through and confirm<br/>18 for me that that is a true and accurate copy of your<br/>19 expert report from January 25th, 2023.<br/>20 A Yes, this looks like you have to click 11:49AM<br/>21 instead of scroll. So I would like to -- I don't know<br/>22 if there is a quick way to get to the end.<br/>23 Q Let's go off the record for a second.<br/>24 A Okay.<br/>25 THE VIDEOGRAPHER: We're off the record. 11:49AM<br/>Page 18</p> | <p>1 Q Okay. When you say "complaints," do you 11:55AM<br/>2 mean the amended complaint in this case?<br/>3 A It was a complaint that had -- I'm not sure<br/>4 exactly which version of the complaint it is. But<br/>5 there was a version of the complaint that had a series 11:55AM<br/>6 of statements in it that I responded to in my report,<br/>7 a complaint from the plaintiffs.<br/>8 Q In terms of providing documents, did you<br/>9 receive documents from counsel for purposes of your<br/>10 report? 11:55AM<br/>11 A Counsel did forward documents to me when I<br/>12 requested them or I requested document about a certain<br/>13 area or a topic, yes.<br/>14 Q Did you receive assistance in editing your<br/>15 report? 11:56AM<br/>16 A I believed some comments about what I had<br/>17 written but not specifically in doing editing of the<br/>18 report. So I actually went back and made some edits<br/>19 myself.<br/>20 But the edits, they were just suggestions 11:56AM<br/>21 about, hey, you need to clarify this and things like<br/>22 that.<br/>23 Q Did you talk to anyone about the content<br/>24 of your report before it was finalized?<br/>25 A I had talked to the Cravath lawyers about 11:56AM<br/>Page 20</p>               |
| <p>1 It's 11:49 a.m. 11:49AM<br/>2 (Recess taken.)<br/>3 THE VIDEOGRAPHER: We're back on the<br/>4 record. It's 11:53 a.m.<br/>5 BY MS. JENSEN: 11:53AM<br/>6 Q Okay. So, Dr. Detomo, I just want to<br/>7 reask the question.<br/>8 Does this appear to be a true and accurate<br/>9 copy of your expert report dated January 25th, 2023?<br/>10 A Yes, it is. 11:54AM<br/>11 Q Who wrote this report?<br/>12 A I did.<br/>13 Q Did you receive any assistance in writing<br/>14 the report?<br/>15 A I received some assistance in -- around what 11:54AM<br/>16 topics and in terms of providing documents, but I<br/>17 wrote all of the report. So nobody wrote any sections<br/>18 of it.<br/>19 Q What assistance did you receive around<br/>20 what topics to write on? 11:54AM<br/>21 A So it was just a list of topics. So, for<br/>22 instance, I was instructed to read and give my opinion<br/>23 on complaints. I was instructed to read and give my<br/>24 opinion on the expert reports.<br/>25 And so -- and that's what I did. 11:55AM<br/>Page 19</p>   | <p>1 the version of my report before I finalized it. 11:56AM<br/>2 Q How many times?<br/>3 A The report was a body of work which was not<br/>4 written all at one time, so it was written over the<br/>5 period of a number of months. 11:57AM<br/>6 And occasionally I would send a version to<br/>7 the Cravath lawyers and ask them if they -- you<br/>8 know, if there were anything that needed<br/>9 clarification or if there was something else I<br/>10 needed to address. 11:57AM<br/>11 So, for instance, the expert reports came<br/>12 in later. And then I had to go through and write<br/>13 the areas that addressed them.<br/>14 Q What was your assignment?<br/>15 A My assignment was to read the information 11:57AM<br/>16 that was available and to offer my expert opinion on<br/>17 the validity or comments on the -- on what I read,<br/>18 mostly around technical matters, well, entirely around<br/>19 technical matters.<br/>20 Q Now, in your report, you say that you were 11:58AM<br/>21 asked to review and respond to the expert reports of<br/>22 Dr. Merrill and Mr. Pittinger; correct?<br/>23 A Yes.<br/>24 Q Also says that you were retained to<br/>25 provide opinions about Anadarko's appraisal of the 11:58AM<br/>Page 21</p> |

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| <p>1 Shenandoah prospect in its public statements related 11:58AM<br/>2 thereto; correct?</p> <p>3 A For some -- I don't know all of the public<br/>4 statements, but to the subset of public statements I<br/>5 was provided, yes. 11:58AM</p> <p>6 Q And the public statements that you were<br/>7 provided, those are the ones that you commented on<br/>8 in your report?</p> <p>9 A Yes.</p> <p>10 Q So the purpose of your report was to rebut 11:59AM<br/>11 Dr. Merrill and Dr. Pittinger; correct?</p> <p>12 A No, the purpose of my report was to make<br/>13 comment as to my technical opinion with respect to<br/>14 some of the opinions that they had made. So in my<br/>15 professional experience, some of those opinions I 11:59AM<br/>16 agreed with and some of them I did not.</p> <p>17 Q Okay. So I think I'm asking a different<br/>18 question. So maybe we're kind of crossing each<br/>19 other here.</p> <p>20 A Okay. 11:59AM</p> <p>21 Q So what I'm saying is that the purpose of<br/>22 your report, as you just mentioned, was to respond<br/>23 to the plaintiffs' expert reports; correct?</p> <p>24 A That was one of the purposes. The purpose<br/>25 was to offer my technical opinion about comments and 11:59AM<br/>Page 22</p> | <p>1 Those would be some of the opinions that Dr. Merrill 12:01PM<br/>2 or Mr. Pittinger had to which I didn't comment.</p> <p>3 Q I think we were getting a little confused<br/>4 here. So what I'm trying to ask you is: Could you<br/>5 please identify any opinion that you're offering 12:01PM<br/>6 that is not in rebuttal?</p> <p>7 A I did not specifically go through and<br/>8 identify which particular lines that I agreed with.<br/>9 So I only captured in the report the ones in general I<br/>10 disagreed with. 12:02PM</p> <p>11 There may be one or two in there where I<br/>12 mentioned that I agree with a certain opinion. But<br/>13 I would have to look for them.</p> <p>14 Q Okay. So if I understand correctly then,<br/>15 all of your opinions are in rebuttal to Dr. Merrill 12:02PM<br/>16 and Mr. Pittinger?</p> <p>17 A Most of the opinions I wrote of in the<br/>18 report are in rebuttal, yes.</p> <p>19 Q So now what I'm trying to get at is tell<br/>20 me which opinions are not in rebuttal. 12:02PM</p> <p>21 A I would have to look through the report to<br/>22 identify exactly which ones. But I think -- give me a<br/>23 second. Let me think. I think there were some<br/>24 comments -- well, I would have to speculate.<br/>25 I believe there were some comments by 12:03PM<br/>Page 24</p> |
| <p>1 issues that were raised, technical opinions about 12:00PM<br/>2 them.</p> <p>3 Q That was all within the scope of rebutting<br/>4 the reports of Dr. Merrill and Mr. Pittinger;<br/>5 correct? 12:00PM</p> <p>6 A I was not specifically asked to rebut them.<br/>7 I was asked to make comment on them and the ones I<br/>8 disagreed with, I rebutted.</p> <p>9 Q Okay. So maybe we're just not<br/>10 understanding each other exactly because there's 12:00PM<br/>11 some terminology around this in litigation.</p> <p>12 So do you understand that there is a<br/>13 difference between affirmative opinions and rebuttal<br/>14 opinions?</p> <p>15 A Yes. 12:00PM</p> <p>16 Q Okay. So that's what I'm trying to get<br/>17 at. So your opinions are in rebuttal to Dr. Merrill<br/>18 and Mr. Pittinger; is that right?</p> <p>19 A A number of opinions I made in here were in<br/>20 rebuttal to theirs, yes. 12:01PM</p> <p>21 Q So now we're getting somewhere. So let's<br/>22 talk about outside of rebuttal, what are the<br/>23 opinions that you're offering that are not just in<br/>24 rebuttal?</p> <p>25 A I would have to look specifically for those. 12:01PM<br/>Page 23</p>  | <p>1 Mr. Pittinger associated with the purpose of Rose &amp; 12:03PM<br/>2 Associates' software, which there were certain parts<br/>3 of his opinions about that that I agreed with.</p> <p>4 Q So let's not focus on what you did not<br/>5 say. Let's focus on what you did say. 12:03PM</p> <p>6 You can refer to your report if you need<br/>7 to. But my question is: Which of your opinions, if<br/>8 any -- maybe there's none. But which opinions, if<br/>9 any, are not in rebuttal to Dr. Merrill and<br/>10 Mr. Pittinger? 12:03PM</p> <p>11 A Without going through and specifically<br/>12 looking for them and searching for them in the report,<br/>13 I would not be able to state which ones they are off<br/>14 the top of my head.</p> <p>15 Q Okay. We can go through your report. Why 12:04PM<br/>16 don't you go through your report and tell me which<br/>17 ones are not in rebuttal.</p> <p>18 A Can I search within this document?</p> <p>19 Q I believe so. Let's go off the record for<br/>20 a moment. 12:04PM</p> <p>21 THE VIDEOGRAPHER: We're off the record<br/>22 it's 12:04 p.m.</p> <p>23 (Recess taken.)</p> <p>24 THE VIDEOGRAPHER: Back on the record.<br/>25 It's 12:12 p.m. 12:12PM<br/>Page 25</p>   |



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| <p>1 BY MS. JENSEN: 12:12PM</p> <p>2 Q Okay. So, Dr. Detomo, you have had an</p> <p>3 opportunity to look at your report. Are you able to</p> <p>4 answer the question that I asked?</p> <p>5 A I don't -- I don't find a specific example 12:12PM</p> <p>6 that I could show in my report at this time to -- that</p> <p>7 would be an affirmative response to an opinion by</p> <p>8 Dr. Pittinger -- or Dr. Merrill or Mr. Pittinger. I</p> <p>9 believe that was your question.</p> <p>10 Q So my question, I want to make sure we 12:13PM</p> <p>11 understand each other. You were talking earlier</p> <p>12 about your rebuttal opinions as we call it in the</p> <p>13 business.</p> <p>14 So my question to you is: Do you have any</p> <p>15 opinions that are outside the scope of rebuttal, and 12:13PM</p> <p>16 that's what you were asked to look through your</p> <p>17 report for?</p> <p>18 A Yes, and my answer is I do not find in my</p> <p>19 report affirmative opinions or anything confirming or</p> <p>20 affirmative opinions about those, so no. 12:13PM</p> <p>21 Q Okay. You can set that aside.</p> <p>22 MS. JENSEN: I'm going to mark another</p> <p>23 exhibit. Give me a moment here. I need to restart</p> <p>24 my Exhibit Share. Bear with me for a moment.</p> <p>25 You should be able to see in your Exhibit 12:14PM</p> <p style="text-align: right;">Page 26</p> | <p>1 Q Dr. Detomo, earlier I asked you about your 12:17PM</p> <p>2 compensation in this case. So I believe you</p> <p>3 testified that you're being compensated at an hourly</p> <p>4 rate of \$300 per hour?</p> <p>5 A Yes. 12:18PM</p> <p>6 Q But your report says \$600 per hour;</p> <p>7 correct?</p> <p>8 A I don't recall that. I would have to look</p> <p>9 at my report to see.</p> <p>10 Q Look at Paragraph 14. You have the hard 12:18PM</p> <p>11 copy in front of you; right?</p> <p>12 A Yes.</p> <p>13 Q You can look at the hard copy. We wanted</p> <p>14 to authenticate your expert report in the first</p> <p>15 instance, but I think from here on out, it would 12:18PM</p> <p>16 probably be easier to refer to the hard copy.</p> <p>17 A Okay. Paragraph 14? That's an error.</p> <p>18 Q It's actually 300?</p> <p>19 A It is 300, that's an error.</p> <p>20 Q Would you like to amend your report to 12:19PM</p> <p>21 state that you're being compensated at the rate of</p> <p>22 \$300 per hour?</p> <p>23 A Yes, I would. I'm surprised because I know</p> <p>24 for a fact I wrote 300 in there at one time. So yes.</p> <p>25 Because it's never been 600, although 600 12:19PM</p> <p style="text-align: right;">Page 28</p>  |
| <p>1 Share a document that's been previously marked as 12:14PM</p> <p>2 Exhibit 4798.</p> <p>3 A Yes.</p> <p>4 Q And my question is whether you recognize</p> <p>5 this to be Dr. Merrill's expert report that you were 12:15PM</p> <p>6 responding to in your report?</p> <p>7 A I'm opening it.</p> <p>8 Yes, this is the document I reviewed.</p> <p>9 Q Let me show you another document.</p> <p>10 You should be able to see in your Exhibit 12:16PM</p> <p>11 Share a document that's been previously marked as</p> <p>12 Exhibit 499.</p> <p>13 Will you please confirm that this was the</p> <p>14 Pittinger expert report that you were responding to</p> <p>15 in your report? 12:16PM</p> <p>16 A Is the one you just put in 499?</p> <p>17 Q Yes, it is.</p> <p>18 A Because it went in a different order, but</p> <p>19 okay. Apparently it orders them by number.</p> <p>20 Q That's right. I should have mentioned 12:16PM</p> <p>21 that. It can get a little confusing.</p> <p>22 A Yes, I recognize this report. This is the</p> <p>23 one I reviewed.</p> <p>24 Q You can set that aside for now.</p> <p>25 A Okay. 12:17PM</p> <p style="text-align: right;">Page 27</p>  | <p>1 would have been nice. 12:19PM</p> <p>2 Q Okay. You can set that aside for now.</p> <p>3 A Okay.</p> <p>4 Q I want to ask you about your opinions.</p> <p>5 Are you offering an expert opinion in this 12:19PM</p> <p>6 case on Shenandoah's commerciality?</p> <p>7 A I'm offering an opinion on what it takes for</p> <p>8 something to be commercial. So in terms of whether or</p> <p>9 not it's commercial at different stages, the only</p> <p>10 thing I can say is if something is commercial, then it 12:20PM</p> <p>11 has a clear definition.</p> <p>12 So I'm not sure when you say whether or</p> <p>13 not something is going to be commercial, I don't</p> <p>14 know how to define that. But I can make a comment</p> <p>15 as to whether or not something currently meets or 12:20PM</p> <p>16 whether or not it will be commercial, yes.</p> <p>17 Q So my question is a little different.</p> <p>18 Are you offering an expert opinion on</p> <p>19 whether or not Shenandoah was commercially viable</p> <p>20 during the class period? 12:20PM</p> <p>21 A I'm not exactly sure what the word "viable"</p> <p>22 means. I can offer an opinion as to whether or not it</p> <p>23 was -- during the class period, whether or not the</p> <p>24 proper work was being done to define whether or not it</p> <p>25 was commercial. 12:21PM</p> <p style="text-align: right;">Page 29</p> |

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| <p>1 Q The answer to my question is no? 12:21PM</p> <p>2 A I don't know what the word "viable" means.</p> <p>3 So you have to define that. What do you mean by</p> <p>4 "viable"?</p> <p>5 Q You're not familiar with that term? 12:21PM</p> <p>6 A Not with respect to commerciality. So I</p> <p>7 would say I could offer an opinion as to whether or</p> <p>8 not something is commercial.</p> <p>9 Q So are you offering an opinion on whether</p> <p>10 or not Shenandoah was commercial during the class 12:21PM</p> <p>11 period?</p> <p>12 A Yes.</p> <p>13 Q And is your opinion that it was commercial</p> <p>14 at the time?</p> <p>15 A No, it's my opinion that the right 12:21PM</p> <p>16 information was being collected to decide if it was</p> <p>17 commercial.</p> <p>18 Q So you're not offering an opinion one way</p> <p>19 or the other whether Shenandoah was commercial</p> <p>20 during the class period? 12:21PM</p> <p>21 A You can only offer an opinion about</p> <p>22 commerciality if you have the information that defines</p> <p>23 it.</p> <p>24 During the class period, the information</p> <p>25 was ambiguous enough to not know yet whether or not 12:22PM</p> <p style="text-align: right;">Page 30</p> | <p>1 I have quite a bit of experience with it. 12:23PM</p> <p>2 Q Are you offering an expert opinion that</p> <p>3 Anadarko's statements to investors were not false</p> <p>4 and misleading as to Shenandoah?</p> <p>5 A The expert opinions that I -- or the 12:24PM</p> <p>6 disclosures to the public that I reviewed, yes, they</p> <p>7 were not misleading in my expert opinion.</p> <p>8 Q Are you offering an opinion that</p> <p>9 Anadarko's statements to investors were appropriate</p> <p>10 under SEC disclosure rules? 12:24PM</p> <p>11 A The ones I reviewed, yes.</p> <p>12 Q Are you offering an expert opinion that</p> <p>13 the alleged omissions were legally immaterial?</p> <p>14 MS. PHILLIPS: Objection.</p> <p>15 THE WITNESS: Yes. Okay. 12:24PM</p> <p>16 Yes, I don't have an opinion on what</p> <p>17 defines the legality of what they did. I can only</p> <p>18 respond as to the technical merit of what they said.</p> <p>19 BY MS. JENSEN:</p> <p>20 Q Are you opining that the alleged omissions 12:24PM</p> <p>21 were unimportant to investors?</p> <p>22 A Any -- when you report to investors, you</p> <p>23 usually report truthfully facts. And any -- I'm not</p> <p>24 sure how to define whether or not omissions are</p> <p>25 important. 12:25PM</p> <p style="text-align: right;">Page 32</p> |
| <p>1 it was commercial. 12:22PM</p> <p>2 So during the class period I could not</p> <p>3 say, with the information at that time, whether or</p> <p>4 not it was going to be commercial. By today's</p> <p>5 information I can. 12:22PM</p> <p>6 MS. JENSEN: I'm going to strike the</p> <p>7 answer after "going to be commercial" as beyond the</p> <p>8 scope and nonresponsive.</p> <p>9 Q Are you offering an expert opinion on the</p> <p>10 work of petroleum or reservoir engineers? 12:22PM</p> <p>11 A Yes.</p> <p>12 Q Are you offering an expert opinion on the</p> <p>13 work of geologists in this case?</p> <p>14 A Yes.</p> <p>15 Q Geophysicists? 12:23PM</p> <p>16 A Yes.</p> <p>17 Q Are you offering an expert opinion on</p> <p>18 faulting and compartmentalization?</p> <p>19 A Yes.</p> <p>20 Q Are you offering an expert opinion on the 12:23PM</p> <p>21 impact of asphaltene deposition and mitigation?</p> <p>22 A I'm offering the level of knowledge and</p> <p>23 experience that I have with respect to it.</p> <p>24 As to whether it reaches the level of</p> <p>25 expert opinion, I don't know what that level is, but 12:23PM</p> <p style="text-align: right;">Page 31</p>                                    | <p>1 Every piece of information to an investor 12:25PM</p> <p>2 might be important, but not all information is</p> <p>3 always exposed to investors or anyone outside of the</p> <p>4 company.</p> <p>5 Q Are you offering a truth on the market 12:25PM</p> <p>6 defense?</p> <p>7 A I'm not sure I understand what market</p> <p>8 defense is.</p> <p>9 Q Are you offering a truth on the market</p> <p>10 defense? 12:25PM</p> <p>11 A I do not know what that is, so I would have</p> <p>12 to say I can't comment one way or another without</p> <p>13 knowing what it is.</p> <p>14 Q So in formulating your report, you</p> <p>15 reviewed documents that were provided to you by 12:26PM</p> <p>16 counsel, as you mentioned earlier; correct?</p> <p>17 A Yes.</p> <p>18 Q And you also reviewed academic papers?</p> <p>19 A Yes.</p> <p>20 Q And to what areas did you turn to academic 12:26PM</p> <p>21 literature to review?</p> <p>22 A Well, I reviewed -- I referenced a number of</p> <p>23 academic papers that I was already familiar with. So,</p> <p>24 for instance, information academic papers on turbidite</p> <p>25 deposition. I referenced academic papers on 12:26PM</p> <p style="text-align: right;">Page 33</p>  |

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| <p>1 mitigations for asphaltenes. And I'm sure I 12:27PM</p> <p>2 referenced others as well, so...</p> <p>3 Q Did you review papers about topics you had</p> <p>4 less recent or direct experience working with?</p> <p>5 A I'm trying to recall any topics that I had 12:27PM</p> <p>6 that I made comments on that I did not have a lot of</p> <p>7 experience with. So I may or may not have.</p> <p>8 I don't recall specifically which papers I</p> <p>9 might have reviewed which were in areas that I had</p> <p>10 less experience with. Usually I looked for academic 12:28PM</p> <p>11 papers in areas that I was already familiar with.</p> <p>12 Q And did you provide in the case all the</p> <p>13 academic papers or literature upon which you relied?</p> <p>14 A Any of the ones that I quoted, I included in</p> <p>15 my -- that I referenced in my report, I included. I 12:28PM</p> <p>16 may or may not have read additional papers as well.</p> <p>17 So I didn't reference every paper that I</p> <p>18 had read.</p> <p>19 Q Did any of the other papers impact your</p> <p>20 thinking for the report? 12:28PM</p> <p>21 A No, they did not.</p> <p>22 Q What is meant by the acronym MMRA?</p> <p>23 A MMRA is a term used to define a process for</p> <p>24 doing risk assessments.</p> <p>25 Q What does the acronym mean or what does it 12:29PM</p> <p style="text-align: right;">Page 34</p> | <p>1 A No, I have not. 12:31PM</p> <p>2 Q You didn't because you didn't feel it was</p> <p>3 necessary to do so; correct?</p> <p>4 A I didn't do it because I didn't have all the</p> <p>5 appropriate data that would be necessary to do it. 12:31PM</p> <p>6 Q But you still stand by the conclusions of</p> <p>7 your report; right?</p> <p>8 A I stand by the conclusions of my report</p> <p>9 based upon the number of times I've used that software</p> <p>10 in the past. 12:31PM</p> <p>11 Q But you stand by your report even though</p> <p>12 you did not independently calculate any of the MMRA</p> <p>13 values?</p> <p>14 A Yes.</p> <p>15 Q Who typically conducts an MMRA analysis in 12:31PM</p> <p>16 a project like Shenandoah?</p> <p>17 A The analysis is usually performed by an</p> <p>18 integrated team that each bring information to bear to</p> <p>19 assess what the different risk and range of values</p> <p>20 might be. 12:32PM</p> <p>21 Q And who actually runs the analysis?</p> <p>22 A It varies from company to company. It's</p> <p>23 usually one of the subsurface people, so either a</p> <p>24 geologist, geophysicist or reservoir engineer.</p> <p>25 Q At Anadarko, it's the reservoir engineer; 12:32PM</p> <p style="text-align: right;">Page 36</p>                   |
| <p>1 stand for? 12:29PM</p> <p>2 A The specifics of the acronym I would have to</p> <p>3 look up because they are -- they are specific to a</p> <p>4 company, but it's -- so I don't know what the two</p> <p>5 first Ms necessarily stand for without referencing it 12:29PM</p> <p>6 again. But it's a risk assessment methodology which</p> <p>7 is followed by Anadarko.</p> <p>8 Q What is the company name?</p> <p>9 A The company name that proposes MMRA is</p> <p>10 Rose &amp; Associates. 12:29PM</p> <p>11 Q What is the nature of the methodology?</p> <p>12 A The nature of the methodology is to -- is to</p> <p>13 try to define both a risk-based volume assessment of</p> <p>14 an opportunity where the range of values have a great</p> <p>15 deal or a range of uncertainty associated with it. 12:30PM</p> <p>16 Q You did not conduct your own MMRA analysis</p> <p>17 in this case, did you?</p> <p>18 A No, I did not.</p> <p>19 Q Did you ask anyone else to conduct an MMRA</p> <p>20 analysis for you? 12:30PM</p> <p>21 A No, I did not.</p> <p>22 Q Did you do your own calculations about</p> <p>23 what the P10 or P90 should have been at any given</p> <p>24 point leading up to or during the class period with</p> <p>25 respect to Shenandoah? 12:31PM</p> <p style="text-align: right;">Page 35</p>  | <p>1 correct? 12:32PM</p> <p>2 A I don't know if they have required it to be</p> <p>3 the reservoir engineer. I know the reservoir engineer</p> <p>4 at Anadarko actually did do some of the runs.</p> <p>5 But I know that those runs are made by a 12:32PM</p> <p>6 variety of people.</p> <p>7 Q At Anadarko, the runs were by engineers</p> <p>8 and not geophysicists or geologists; correct?</p> <p>9 A Yes, I don't -- the numbers are reported</p> <p>10 from the team. So who actually pushed the buttons in 12:32PM</p> <p>11 the -- in running the program, I don't know</p> <p>12 specifically who did that.</p> <p>13 Q You just don't know one way or the other?</p> <p>14 A I know for a fact that the geology, the</p> <p>15 geophysics play a huge role in knowing what values to 12:33PM</p> <p>16 put in.</p> <p>17 Q That's not the question I'm asking.</p> <p>18 I'm asking whether you know at Anadarko</p> <p>19 who ran the MMRA analysis for Shenandoah?</p> <p>20 A There are some runs that have a name 12:33PM</p> <p>21 associated with them. So those runs you would be able</p> <p>22 to know who ran them.</p> <p>23 Q Right. It was the reservoir engineer;</p> <p>24 correct?</p> <p>25 A On most of the ones I looked at, yes. 12:33PM</p> <p style="text-align: right;">Page 37</p> |

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| <p>1 Q You're not aware of any run that had 12:33PM<br/>2 someone other than an engineer; right?<br/>3 A There were hundreds of runs. So I don't<br/>4 recall any of them specifically having a name that was<br/>5 not a reservoir engineer. 12:34PM<br/>6 Q Now, in your experience, you've never had<br/>7 exclusive responsibility for conducting an MMRA<br/>8 analysis; right?<br/>9 A No, that's not true.<br/>10 Q Okay. So which -- tell us about your 12:34PM<br/>11 experience where you had exclusive responsibility<br/>12 for conducting an MMRA analysis.<br/>13 A For one year I was Shell's representative to<br/>14 Rose &amp; Associates for developing and applying their<br/>15 software. So I actually made MMRA runs with 12:34PM<br/>16 Rose Associates' software many times.<br/>17 Q And when was that?<br/>18 A That was in the late 2000s, so 2006, 2007.<br/>19 Q And what -- who was your contact at Rose &amp;<br/>20 Associates? 12:35PM<br/>21 A I worked mostly with Rocky Roden and -- and,<br/>22 let's see, Mike Forrest were leading the consortium<br/>23 meetings.<br/>24 Q What do you mean by "consortium meetings"?<br/>25 A The Rose &amp; Associates software was built 12:35PM<br/>Page 38</p> | <p>1 Now, you reviewed a number of seismic 12:37PM<br/>2 images for this case; correct?<br/>3 A Yes.<br/>4 Q Can you describe how seismic images are<br/>5 created? 12:37PM<br/>6 A Sure. One creates sound waves at or near<br/>7 the surface. The sound waves propagate through the<br/>8 earth. Anyplace that there is a change in the<br/>9 acoustic impedance in the earth, the sound waves are<br/>10 partially transmitted and partially reflected. 12:38PM<br/>11 Any of the reflected sound energy that<br/>12 reaches back to the surface is collected with<br/>13 acoustic sensors.<br/>14 And those acoustic waves, as they are<br/>15 collected back at the surface, can then be resembled 12:38PM<br/>16 and used to image a version of the earth that<br/>17 represents where acoustic impedances are hard and<br/>18 where they are soft.<br/>19 Q How long does it take to create a 3D<br/>20 seismic image? 12:38PM<br/>21 A Excuse me.<br/>22 In the marine world, such as Shenandoah<br/>23 is, the seismic acquisition depends on the type of<br/>24 acquisition system used. But the acquiring of the<br/>25 data typically takes anywhere -- usually on the 12:39PM<br/>Page 40</p>  |
| <p>1 upon a series of consortiums that reached across a 12:35PM<br/>2 number of companies in order to gain input as to what<br/>3 companies would consider in building a risking<br/>4 software and volumetric calculation.<br/>5 Q Besides Rocky and Mike, did you have any 12:36PM<br/>6 other contacts at Rose &amp; Associates?<br/>7 A Not specific. I mean, there were various<br/>8 people that came and went, various experts. So those<br/>9 two I think were integral to the development of the<br/>10 software. 12:36PM<br/>11 Q You discuss in your report the<br/>12 probabilistic and deterministic approaches; right?<br/>13 A Yes.<br/>14 Q And as to the probabilistic and<br/>15 deterministic approaches, the P90, P50 and P10 12:36PM<br/>16 scenarios should reconcile with deterministically<br/>17 derived quantities for low, best and high estimates;<br/>18 right?<br/>19 A Not exactly. They are usually related, but<br/>20 they don't necessarily agree. 12:37PM<br/>21 Q So are you saying that's not industry<br/>22 standard?<br/>23 A No, there is no industry standard for<br/>24 risking or volumetric calculation.<br/>25 Q Okay. We'll come back to that. 12:37PM<br/>Page 39</p>                       | <p>1 range of months. 12:39PM<br/>2 Once the data is acquired, it usually<br/>3 takes anywhere from eight months to two years to<br/>4 process the seismic data and create an image.<br/>5 Then on top of that, the computing 12:39PM<br/>6 capacity and technical capability of the software<br/>7 improves over time. So people typically go back and<br/>8 take older data and reprocess it in order to get an<br/>9 updated image.<br/>10 So anyways, to get an image is years. 12:40PM<br/>11 Q And you didn't review the underlying<br/>12 seismic volume in this case; correct?<br/>13 A I looked at the acquisition and processing<br/>14 that was done on each of the seismic data volumes that<br/>15 were used by the Shenandoah JV, but I did not view the 12:40PM<br/>16 3D data in a 3D viewer, no.<br/>17 Q And you did not create your own 3D<br/>18 interpretations for this case?<br/>19 A No, I did not.<br/>20 Q And you did not view that as necessary to 12:40PM<br/>21 your work?<br/>22 A I did not view it as -- it would have been<br/>23 interesting to do. But it would have required a<br/>24 tremendous amount of time and access to a lot of<br/>25 digital data. So it was not a practical thing to try 12:41PM<br/>Page 41</p> |

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| <p>1 to approach. 12:41PM</p> <p>2 Q And despite not having reviewed the</p> <p>3 underlying seismic volume or creating your own 3D</p> <p>4 interpretation, you still stand by the conclusions</p> <p>5 in your report; right? 12:41PM</p> <p>6 A Yes, I do. Having been a risk and general</p> <p>7 manager for seismic interpretive groups in the past, I</p> <p>8 have quite a bit of experience with looking at their</p> <p>9 output results and trying to identify strengths and</p> <p>10 weaknesses. 12:41PM</p> <p>11 MS. JENSEN: Okay. Let's take a quick</p> <p>12 break.</p> <p>13 THE WITNESS: Okay. How long?</p> <p>14 MS. JENSEN: Let's go off the record</p> <p>15 first. 12:42PM</p> <p>16 THE VIDEOGRAPHER: We're off the record.</p> <p>17 It's 12:41 p.m.</p> <p>18 (Recess taken.)</p> <p>19 THE VIDEOGRAPHER: Back on the record,</p> <p>20 it's 12:57 p.m. 12:58PM</p> <p>21 BY MS. JENSEN:</p> <p>22 Q Welcome back, Dr. Detomo.</p> <p>23 A Thank you.</p> <p>24 Q Let's turn to Appendix 2 of your report.</p> <p>25 A Okay. 12:58PM</p> <p style="text-align: right;">Page 42</p> | <p>1 A Yes, I don't recall the number. 12:59PM</p> <p>2 Q Any courses in petroleum engineers?</p> <p>3 A No.</p> <p>4 Q Did you take any finance or business</p> <p>5 courses? 12:59PM</p> <p>6 A No.</p> <p>7 Q After you obtained your degrees, you</p> <p>8 worked at Shell for a good spell; right?</p> <p>9 A Yes, I worked at Shell for 33 years.</p> <p>10 Q And from there you started a consulting 12:59PM</p> <p>11 business?</p> <p>12 A Yes.</p> <p>13 Q Shell is the only oil company you've</p> <p>14 worked for; right?</p> <p>15 A The only oil company I worked directly for, 1:00PM</p> <p>16 yes.</p> <p>17 Q At Shell did you receive any formal</p> <p>18 training in petroleum training?</p> <p>19 A Yes.</p> <p>20 Q What courses? 1:00PM</p> <p>21 A A series of courses in petroleum engineering</p> <p>22 that stretched over a few weeks during my first few</p> <p>23 years and then courses in petroleum engineering</p> <p>24 depending upon the requirements of the job I was doing</p> <p>25 at the time. 1:00PM</p> <p style="text-align: right;">Page 44</p>                                  |
| <p>1 Q Okay. And this is your C.V.? 12:58PM</p> <p>2 A Yes, it is.</p> <p>3 Q And it's a true, accurate and complete?</p> <p>4 A Yes, it is.</p> <p>5 Q So you obtained degrees in physics and 12:58PM</p> <p>6 nuclear physics?</p> <p>7 A Yes.</p> <p>8 Q At Ohio State, did you take any courses in</p> <p>9 petroleum geology?</p> <p>10 A No. 12:58PM</p> <p>11 Q Did you take any courses in seismic</p> <p>12 interpretation?</p> <p>13 A No. But I did take courses in acoustic wave</p> <p>14 propagation.</p> <p>15 Q Did you take any courses in geological 12:59PM</p> <p>16 risk assessment?</p> <p>17 A No.</p> <p>18 Q Economics?</p> <p>19 A Yes.</p> <p>20 Q Which courses? 12:59PM</p> <p>21 A It was like economics -- it was a senior --</p> <p>22 a course I took as a senior in undergraduate. Just a</p> <p>23 general course in economics, undergraduate course in</p> <p>24 economics.</p> <p>25 Q Like Econ 101? 12:59PM</p> <p style="text-align: right;">Page 43</p>   | <p>1 Q And your positions were as a geoscientist; 1:00PM</p> <p>2 right?</p> <p>3 A Only initially.</p> <p>4 Q What were all your -- let's take a step</p> <p>5 back. 1:00PM</p> <p>6 So your discipline was geoscience; right?</p> <p>7 A When I joined Shell Oil Company, I was hired</p> <p>8 as a geoscientist.</p> <p>9 Q Did you take any formal training courses</p> <p>10 in geology? 1:01PM</p> <p>11 A Yes.</p> <p>12 Q Which courses?</p> <p>13 A Three field trips to Big Bend, field trips</p> <p>14 to Wyoming, field trips to reach carbonates in the</p> <p>15 Gulf of Mexico, trips to look at turbidite outcrops in 1:01PM</p> <p>16 the Karoo in South Africa.</p> <p>17 A number of office geology classes with</p> <p>18 senior geologists. Shell ran an extensive program</p> <p>19 if you were working on a particular type of geology,</p> <p>20 so... 1:01PM</p> <p>21 Q Did you take or receive any formal</p> <p>22 training in economic analysis?</p> <p>23 A Yes.</p> <p>24 Q Which?</p> <p>25 A In order to move to a management position in 1:02PM</p> <p style="text-align: right;">Page 45</p> |

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| <p>1 Shell, you needed to take a series of economic courses 1:02PM<br/>2 that were taught -- some were taught internally and<br/>3 some were externally provided.<br/>4 Q What were they?<br/>5 A They were mostly economic courses in how to 1:02PM<br/>6 calculate things like profit investment ratios in<br/>7 earnings, in all of the things you would need in order<br/>8 to evaluate the economics of a prospect or a field.<br/>9 Q And those were in-house?<br/>10 A Some of them were in-house and some of them 1:02PM<br/>11 they brought external consultants or companies in to<br/>12 teach us.<br/>13 Q But at Shell?<br/>14 A At Shell.<br/>15 Q What risk assessment software does Shell 1:03PM<br/>16 use internally, or did it at the time?<br/>17 A Shell uses an internal risk assessment<br/>18 series of software. It's more than one type of<br/>19 software, it's really a process that they use.<br/>20 And it has changed over time, obviously. 1:03PM<br/>21 The software and the process we used in the 1990s<br/>22 was very different than the process we used in 2012.<br/>23 But the software is fairly homegrown and<br/>24 it includes both deterministic and probabilistic<br/>25 estimates. 1:03PM</p> <p style="text-align: right;">Page 46</p> | <p>1 Q But that's a different question. 1:05PM<br/>2 A So I would run the Rose &amp; Associates<br/>3 software on our internal prospects to compare to our<br/>4 internal system for risking.<br/>5 Q You still haven't answered my question, 1:05PM<br/>6 which is did you take any courses?<br/>7 A I don't -- I would have to say no because<br/>8 they did not actually teach courses then. So we would<br/>9 run the software and work together on it. But they<br/>10 didn't teach it as a course. 1:05PM<br/>11 Q So you've never received any formal<br/>12 training?<br/>13 A No, on Rose &amp; Associates' software from<br/>14 Rose &amp; Associates, no.<br/>15 Q Now, the MMRA was used by Anadarko to 1:05PM<br/>16 estimate the potential of Shenandoah; right?<br/>17 A Yes.<br/>18 Q What are the inputs for the MMRA analysis?<br/>19 A Well, it depends. Well, it has a series of<br/>20 inputs. You have to estimate the geologic risk 1:06PM<br/>21 factor -- for risking, you have to estimate the<br/>22 geologic risk factor, which involves estimating the<br/>23 probability of trap, the probability of source, the<br/>24 probability of reservoir, the probability of seal.<br/>25 And I'm not sure if I said charge, but 1:06PM</p> <p style="text-align: right;">Page 48</p>   |
| <p>1 Q You say it's homegrown, it's proprietary 1:03PM<br/>2 to Shell?<br/>3 A Yes.<br/>4 Q And so let's take the later time frame.<br/>5 What was it called by, say, 2010? 1:04PM<br/>6 A It was just called risk assessment --<br/>7 Q Okay.<br/>8 A -- at Shell.<br/>9 Q Okay. Now, you personally run the risk<br/>10 assessment software in doing prospect valuations? 1:04PM<br/>11 A I have run the risk assessments and, in<br/>12 fact, I used to teach the risk assessment methodology<br/>13 for the -- at one time for the Gulf of Mexico.<br/>14 Q Teach it to whom?<br/>15 A To younger Shell employees. 1:04PM<br/>16 Q Okay. And so the training was to do this<br/>17 with the homegrown software at Shell?<br/>18 A Yes.<br/>19 Q Did you ever take a Rose &amp; Associate<br/>20 course in risk analysis? 1:04PM<br/>21 A As I mentioned, I was Shell's -- Shell is<br/>22 always interested in keeping tabs on other<br/>23 developments and so for one year, Shell paid to join<br/>24 the consortium and I was their representative to the<br/>25 Rose &amp; Associates group. 1:05PM</p> <p style="text-align: right;">Page 47</p>   | <p>1 there are like five major inputs into looking at 1:06PM<br/>2 that.<br/>3 Then for volumes you have to input<br/>4 information about the size in terms of area, the<br/>5 thickness of the hydrocarbon column. You usually 1:06PM<br/>6 have to put in a factor, some type of shake factor<br/>7 that accounts for the thinning at the edges of it.<br/>8 You have to put in some information if you<br/>9 want recoverables about what the recovery factor is.<br/>10 You have to put in estimates for the porosity. 1:07PM<br/>11 They usually deal with recovery as a<br/>12 single factor rather than looking at the components<br/>13 of recovery factor in Rose &amp; Associates' software.<br/>14 But anyways, you input these in and then<br/>15 it uses a -- an assumption about the distribution of 1:07PM<br/>16 values and the assumption is that they follow a<br/>17 logarithmic distribution.<br/>18 So if you estimate two points on the<br/>19 logarithmic curve, it will estimate the third.<br/>20 Typically they estimate P10, P90 and it 1:07PM<br/>21 will interpolate P50.<br/>22 Q What is meant by P10, P50 and P90 and how<br/>23 are they determined?<br/>24 A Yes, so P50 represents -- of anything,<br/>25 represents there's 50 -- an equal probability of it 1:08PM</p> <p style="text-align: right;">Page 49</p> |



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| <p>1 being bigger or higher than that value and lower than 1:08PM<br/>2 that value.</p> <p>3 So P50 is a probability of 50 percent. So<br/>4 it has equal probability to be higher or lower.</p> <p>5 Then one can also then estimate P10 and 1:08PM<br/>6 P90. Now, most of the industry with the exception<br/>7 of Marathon, but most of the industry refers to P10<br/>8 as there only being a 10 percent chance that<br/>9 something is -- that it's that value or bigger and<br/>10 P90 would represent a 90 percent chance that 1:08PM<br/>11 something is that big or bigger.</p> <p>12 So when you talk about a P90, that usually<br/>13 represents the small case. When you talk about P10,<br/>14 it usually represents a large case.</p> <p>15 Q What about P1, P99? 1:09PM<br/>16 A In exactly the same way, P1 would represent<br/>17 a 1 percent chance that it's that or bigger. So that<br/>18 would represent the most extreme limit of large -- how<br/>19 large it could be.</p> <p>20 And P99 would represent a 99 percent 1:09PM<br/>21 chance it's that or bigger. So that would represent<br/>22 an almost slam dunk that it's at least that number.</p> <p>23 Q What's a risk mean?<br/>24 A The mean?<br/>25 Q Risked mean. 1:09PM</p> <p style="text-align: right;">Page 50</p>        | <p>1 Q Are resource volumes represented by the 1:11PM<br/>2 P50?</p> <p>3 A Resource volumes are represented by a range,<br/>4 so...</p> <p>5 Q Are they -- is it the P50 or are they 1:11PM<br/>6 represented by a probability weighting?</p> <p>7 A When one talks about the volumetrics of an<br/>8 opportunity, even one that's being produced, there's<br/>9 still some uncertainty associated with it. So you<br/>10 usually deal with the range and you might -- for 1:11PM<br/>11 purposes of simple calculation, you might deal with<br/>12 either the P50 or the mean.</p> <p>13 But in general you usually refer to the<br/>14 range. And the range depends upon company. Some<br/>15 companies it's P10, P90, some companies it's P20, 1:11PM<br/>16 P80.</p> <p>17 Q Did Anadarko use the P50 as the expected<br/>18 resource volume in its analysis?</p> <p>19 A Most of the time, but not all the time.<br/>20 Sometimes they refer to the mean value. So it was -- 1:12PM<br/>21 when they did their calculations, they usually used a<br/>22 P50 value.</p> <p>23 Q How do you calculate expected value?<br/>24 A So expected value is the value that you<br/>25 would get if you took each value -- each estimated 1:12PM</p> <p style="text-align: right;">Page 52</p>                                       |
| <p>1 A I'm not sure if you're asking what -- there 1:09PM<br/>2 is a mean, I talked about P50 but there's also a mean<br/>3 as well. It's a mathematical term.</p> <p>4 So a mean is if you average up the<br/>5 probability and the value of each and you add them 1:09PM<br/>6 you will up and you look at where the middle of the<br/>7 distribution is, that would be the mean.</p> <p>8 If you mean what does risk mean, risk just<br/>9 represents the likelihood of occurrence.</p> <p>10 Q And do you view risk mean as 1:10PM<br/>11 interchangeable with a P50?</p> <p>12 A No.</p> <p>13 Q How are they different?</p> <p>14 A They are only the same if you have a perfect<br/>15 normal distribution. By normal distribution I mean 1:10PM<br/>16 it's symmetric on either side and it follows a typical<br/>17 mathematical exponential kind of distribution.</p> <p>18 Not all distributions follow that. In the<br/>19 oil and gas industry, not all parameters follow<br/>20 that. 1:10PM</p> <p>21 So the only time that the mean and that<br/>22 the P50 would be -- they are usually in the ballpark<br/>23 of each other, but there are certain prospects and<br/>24 certain opportunities where they are quite a bit<br/>25 different. 1:11PM</p> <p style="text-align: right;">Page 51</p> | <p>1 value times its risk and you were to add it up. 1:12PM<br/>2 So if I had a value of something that had<br/>3 a 10 percent likelihood of being one number or<br/>4 50 percent likelihood of being another and a<br/>5 90 percent likelihood of being a third, I could 1:13PM<br/>6 weight each of those values by their risk<br/>7 probability and then add them up together and<br/>8 divide.</p> <p>9 So that would give you then a risk value.</p> <p>10 And the reality is you can do that mathematically 1:13PM<br/>11 across the entire curve or you can estimate it just<br/>12 from a few values.</p> <p>13 Q Are the P90, P10 and P50 incorporated into<br/>14 the expected value calculation?</p> <p>15 A In a -- they are included -- they are 1:13PM<br/>16 accounted for. I won't say they are necessarily<br/>17 included because it depends on how you do the<br/>18 calculation.</p> <p>19 Q Okay. Elaborate on that. What do you<br/>20 mean by "it depends on how you do the calculation"? 1:14PM</p> <p>21 A Well, if you're just doing a quick<br/>22 calculation you, can do it just from the three values,<br/>23 right, P10, P50, P90.</p> <p>24 If you actually calculate a probability<br/>25 distribution for volumes, which might be a very 1:14PM</p> <p style="text-align: right;">Page 53</p> |

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| <p>1 complex looking function, then you would actually 1:14PM</p> <p>2 add it up mathematically in a computer.</p> <p>3 So you would actually integrate under that</p> <p>4 curve, so that would give you a more accurate</p> <p>5 estimate. 1:14PM</p> <p>6 People who do simple calculations</p> <p>7 sometimes just do it with the three values, P10,</p> <p>8 P50, P90.</p> <p>9 Q Are costs incorporated into the expected</p> <p>10 value calculation? 1:14PM</p> <p>11 A Costs should be included into it if you want</p> <p>12 expected values because you have expected volumes and</p> <p>13 you should calculate what the costs would be if you</p> <p>14 were to pursue each of those expected volumes.</p> <p>15 Not very many companies do that. A few 1:15PM</p> <p>16 do. And in my experience looking at Anadarko is</p> <p>17 that they did not do that, they did expected values</p> <p>18 usually using one of their P50 or mean values.</p> <p>19 So they didn't necessarily calculate value</p> <p>20 for P10 or for P90. 1:15PM</p> <p>21 Q So is the P -- what about PIR10, is that</p> <p>22 predicated on the P50?</p> <p>23 A At Anadarko, the calculations that I saw</p> <p>24 were predominantly based upon either the P50 or the</p> <p>25 mean and the PIR of 10 would be a profit investment 1:16PM</p> <p style="text-align: right;">Page 54</p>                    | <p>1 have oils that have very, very little gas, you can 1:17PM</p> <p>2 have oils that have a great deal of gas.</p> <p>3 The oil at Shenandoah actually had a</p> <p>4 surprisingly high amount of gas dissolved in it for</p> <p>5 reservoirs of the same age and depth. 1:17PM</p> <p>6 So it was a little usual.</p> <p>7 Q Do you know how much of a difference it</p> <p>8 was in this case?</p> <p>9 A I think it was around -- the gas-to-oil</p> <p>10 ratio was around 12 to 1500. 1:18PM</p> <p>11 Q In log-normal distributions, is it</p> <p>12 inappropriate to interchange those two terms?</p> <p>13 A Well, no, it's not -- a normal distribution</p> <p>14 is a Gaussian and a log-normal distribution is a</p> <p>15 distribution that is logarithmic on one side and a 1:18PM</p> <p>16 Gaussian on the other.</p> <p>17 And a log-log distribution is one that's</p> <p>18 logarithmic on both axes.</p> <p>19 So if you just said "a logarithmic</p> <p>20 distribution" and you didn't say anything else, 1:19PM</p> <p>21 people would assume you meant a log-normal</p> <p>22 distribution.</p> <p>23 But there are log-log distributions. So,</p> <p>24 for instance, permeability and porosity are</p> <p>25 sometimes log-log. 1:19PM</p> <p style="text-align: right;">Page 56</p> |
| <p>1 ratio at a 10 percent inflation factor. 1:16PM</p> <p>2 Q So did Anadarko assess the PIR10 using P50</p> <p>3 alone?</p> <p>4 A Not always. But usually it looked to me</p> <p>5 like they substituted and did it based on the mean. 1:16PM</p> <p>6 They didn't do it on an expected value</p> <p>7 basis including everything from P10 to P90. They</p> <p>8 only did it on the P50 value for the most part.</p> <p>9 Q What is the difference between MMBO and</p> <p>10 MMBOE? 1:16PM</p> <p>11 A MMBO is millions of barrels of oil and MMBOE</p> <p>12 is millions of barrels of oil equivalent. Millions of</p> <p>13 barrels of oil equivalent takes into account the</p> <p>14 expected gas that will come out of solution.</p> <p>15 And so the gas in terms of heat value 1:17PM</p> <p>16 usually equates by about a factor of six, give or</p> <p>17 take a little bit.</p> <p>18 So you would convert millions of cubic</p> <p>19 feet of gas into barrels of oil by dividing it by a</p> <p>20 certain factor. And that just gives you a way of 1:17PM</p> <p>21 adding up volumetrics.</p> <p>22 Q How big of a difference can there be, or</p> <p>23 in this case how much of a difference was there?</p> <p>24 A How much of a difference in general depends</p> <p>25 upon how much gas is dissolved in the oil. You can 1:17PM</p> <p style="text-align: right;">Page 55</p> | <p>1 Q So the answer is no? 1:19PM</p> <p>2 A Correct, the answer is no, you cannot just</p> <p>3 interchange them.</p> <p>4 Q So I would like to run through some of</p> <p>5 your career experience. We did it at a high level. 1:19PM</p> <p>6 Now I would like to ask you some more detailed</p> <p>7 questions.</p> <p>8 From 1981 to 1983, you were a seismic</p> <p>9 processing geophysicist?</p> <p>10 A Yes. 1:19PM</p> <p>11 Q And from '83 to '88, you were a senior</p> <p>12 geophysicist and seismic land acquisition crew</p> <p>13 chief?</p> <p>14 A Yes.</p> <p>15 Q Eighty-eight to '89, you were a senior 1:19PM</p> <p>16 geophysical interpreter in coastal California?</p> <p>17 A Yes.</p> <p>18 Q So from '81 to '92, you worked exclusively</p> <p>19 as a geophysicist; correct?</p> <p>20 A Geophysicist although by the end, actually 1:20PM</p> <p>21 doing quite a bit of geology, because I had had a lot</p> <p>22 of the geologic training by then.</p> <p>23 Q Okay. So moving on into later into the</p> <p>24 '90s. So '95 for '97, you were involved with the</p> <p>25 Shell Enchilada field as the lead staff geophysical 1:20PM</p> <p style="text-align: right;">Page 57</p>   |



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| <p>1 interpreter? 1:20PM</p> <p>2 A Yes. So basically I ran a team, a small</p> <p>3 team of five subsurface people of which our job was to</p> <p>4 evaluate the field and the volumes and to build a</p> <p>5 development plan for it. 1:20PM</p> <p>6 Q So you were the geophysicist; right?</p> <p>7 A I had technical responsibility for the</p> <p>8 geophysics and overall responsibility for generating</p> <p>9 the plan, yes.</p> <p>10 Q Okay. Let's talk about your personal 1:21PM</p> <p>11 role. So you mapped the seismic; is that right?</p> <p>12 A Yes.</p> <p>13 Q Were there any other geophysical tools</p> <p>14 that you used?</p> <p>15 A Well, I used quite a few. So I helped 1:21PM</p> <p>16 guide -- even though I wasn't doing the seismic</p> <p>17 processing, I had enough seismic processing experience</p> <p>18 that I fed back a lot of recommendations and</p> <p>19 information to the people doing the seismic</p> <p>20 processing, including building a salt model and a 1:21PM</p> <p>21 velocity model so they could reprocess the seismic</p> <p>22 data.</p> <p>23 I built the inputs for the reservoir model</p> <p>24 for the reservoir engineer that was working with us.</p> <p>25 I worked closely with the geologists to 1:21PM</p> <p style="text-align: right;">Page 58</p> | <p>1 engineer building the models for the subsurface. 1:23PM</p> <p>2 But then I was also responsible for the</p> <p>3 construction and installation of the offshore</p> <p>4 platform, so I had a construction crew working in</p> <p>5 South Louisiana building a 750-foot tall steel 1:23PM</p> <p>6 structure that would seat on the seafloor and</p> <p>7 building the top sides.</p> <p>8 And then responsible for getting it towed</p> <p>9 out, installed, working with the drilling company to</p> <p>10 put the drilling rig on it, to start drilling the 1:24PM</p> <p>11 wells and to hook up the pipelines, including</p> <p>12 negotiating the tara freight on the pipelines that</p> <p>13 we would feed our oil into.</p> <p>14 Q And did you -- were you responsible for</p> <p>15 the geophysics on the project? 1:24PM</p> <p>16 A Not directly, no. I had a geophysicist</p> <p>17 working for me.</p> <p>18 Q And there was an engineer who led the risk</p> <p>19 assessment and economic analysis of that field?</p> <p>20 A Under my supervision, yes. 1:24PM</p> <p>21 Q You did not perform those tasks</p> <p>22 personally; right?</p> <p>23 A Practically -- I did not do a lot of the</p> <p>24 button pushing, but they were young people and so I</p> <p>25 had to work with them very closely to make sure that 1:24PM</p> <p style="text-align: right;">Page 60</p> |
| <p>1 define the stratigraphy of the basin and I generated 1:22PM</p> <p>2 both -- a number of papers, one of which won an</p> <p>3 award on Enchilada. And I also generated a</p> <p>4 ten-minute video that was used for public to -- was</p> <p>5 made available to the public when the Enchilada 1:22PM</p> <p>6 platform was rolled out to sea.</p> <p>7 Q So that covers what you personally did on</p> <p>8 that project; right?</p> <p>9 A Yes.</p> <p>10 Q All right. So from '97 to '98, you were 1:22PM</p> <p>11 the offshore development project manager for</p> <p>12 Cinnamon?</p> <p>13 A Yes.</p> <p>14 Q At some later point not during this</p> <p>15 deposition, you can explain to me all the -- how you 1:22PM</p> <p>16 name these fields, but --</p> <p>17 A Maybe when we go off, I'll tell you how they</p> <p>18 are done.</p> <p>19 Q Okay. So what was your personal</p> <p>20 responsibility on this project? 1:23PM</p> <p>21 A So I was the offshore project manager. So I</p> <p>22 was responsible for an office team that was doing what</p> <p>23 I had done and what my team had done at Enchilada but</p> <p>24 they were doing it for Cinnamon. I had a team of a</p> <p>25 geologist, geophysicist, petrophysicist, reservoir 1:23PM</p> <p style="text-align: right;">Page 59</p>          | <p>1 they got the evaluations done right, yes. 1:24PM</p> <p>2 Q But yes, it was an engineer that performed</p> <p>3 those tasks; correct?</p> <p>4 A Correct.</p> <p>5 Q Asphaltene was not a significant risk at 1:25PM</p> <p>6 Cinnamon; right?</p> <p>7 A No.</p> <p>8 Q Do you recall what the AOP of the oils</p> <p>9 were?</p> <p>10 A At Cinnamon? 1:25PM</p> <p>11 Q Yes.</p> <p>12 A They were negligible. They weren't worth --</p> <p>13 the bigger issue at Cinnamon was waxes.</p> <p>14 Q There wasn't occasion for asphaltene</p> <p>15 mitigation then in that field there; right? 1:25PM</p> <p>16 A No.</p> <p>17 Q From '98 to 2002, you were working on a</p> <p>18 multidisciplinary team in the GoM?</p> <p>19 A It was principally in the Gulf of Mexico,</p> <p>20 but it started expanding. 1:26PM</p> <p>21 But yes, I was working deepwater in the</p> <p>22 Gulf of Mexico but then with offering advice to</p> <p>23 other deepwater plays around the world.</p> <p>24 Q So as the geophysicist, did you focus on</p> <p>25 the seismic? 1:26PM</p> <p style="text-align: right;">Page 61</p>   |

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| <p>1 A I focused a lot on the seismic. In that 1:26PM<br/> 2 period of time there was a significant number of --<br/> 3 which years, just to be sure?<br/> 4 Q '98 to 2002.<br/> 5 A Oh, '98 to 2002? 1:26PM<br/> 6 Q Yes.<br/> 7 A Okay. '98 to 2002, I was working mostly<br/> 8 around a multidisciplinary team that was charged with<br/> 9 finding and risking and calculating volumes for what<br/> 10 we would call non-amplitude supported prospects or 1:26PM<br/> 11 prospects that were not very obvious.<br/> 12 And so it was -- a lot of it was in the<br/> 13 Gulf of Mexico and also with input to other places<br/> 14 in the world, but yes.<br/> 15 Q You had an engineer on that team? 1:27PM<br/> 16 A Yes, I did.<br/> 17 Q And the engineer on that team was<br/> 18 responsible for evaluating recovery factor and<br/> 19 running economics?<br/> 20 A Yes. 1:27PM<br/> 21 Q And that was not your role; correct?<br/> 22 A My role was to supervise it and to make sure<br/> 23 that those calculations were being done in accordance<br/> 24 with the proper Shell methodologies.<br/> 25 Q Right. That's the Shell proprietary 1:27PM</p> <p style="text-align: right;">Page 62</p> | <p>1 A I just remember the pressures we talked 1:29PM<br/> 2 about now. Obviously the pressures that we were<br/> 3 talking about in these wells were not at the extreme<br/> 4 pressures, high pressures they were talking about with<br/> 5 Shenandoah. 1:29PM<br/> 6 But the dropout pressure, if I remember<br/> 7 right, was on the order of around 3 to 4,000 psi<br/> 8 were the kind of dropout pressures we were typically<br/> 9 looking at in terms of asphaltenes.<br/> 10 Q Between 2002 and 2005, you were a global 1:29PM<br/> 11 deepwater technical advisor?<br/> 12 A Right. So during that period I would fly<br/> 13 around the world and do training and risk assessments<br/> 14 for all the deepwater plays for Shell around the<br/> 15 world. 1:29PM<br/> 16 Q Again, this is using Shell's proprietary<br/> 17 system?<br/> 18 A Right.<br/> 19 Q Were you also involved with a Shell global<br/> 20 quantitative integrated valuation team? 1:30PM<br/> 21 A Yes, that was a team that was kind of like a<br/> 22 hit team that would -- that I led that would go into<br/> 23 an area and over the period of a month help them<br/> 24 organize, evaluate and rank the portfolio of<br/> 25 opportunities. 1:30PM</p> <p style="text-align: right;">Page 64</p> |
| <p>1 system? 1:27PM<br/> 2 A Right. So would I sit on a -- I would sit<br/> 3 on a risk assessment team, much like the RCT that<br/> 4 Anadarko had, and evaluate many of them.<br/> 5 Q Anadarko didn't use that Shell system; 1:27PM<br/> 6 right?<br/> 7 A No.<br/> 8 Q Do you recall any projects that you were<br/> 9 personally involved in asphaltene mitigation during<br/> 10 this time? 1:28PM<br/> 11 A During that period of time or later than<br/> 12 that?<br/> 13 Q During that time.<br/> 14 A Till 2002, I have to think.<br/> 15 We -- we did encounter some -- we did 1:28PM<br/> 16 drill some wells that encountered asphaltenes, but<br/> 17 they weren't developed that year. They were<br/> 18 developed quite a bit later, so -- and mitigation<br/> 19 was put in.<br/> 20 But we were aware of asphaltenes, we had 1:28PM<br/> 21 considered them and they were something that was in<br/> 22 the conversation already as to how we would handle<br/> 23 if a development -- go ahead.<br/> 24 Q I'm sorry. What was the AOP of those<br/> 25 oils? 1:28PM</p> <p style="text-align: right;">Page 63</p>  | <p>1 Q Was this called a QIE team? 1:30PM<br/> 2 A Yes.<br/> 3 Q What quantitative data did that team<br/> 4 evaluate?<br/> 5 A Could you rephrase the question? 1:30PM<br/> 6 Q I believe -- I believe the name of the<br/> 7 team is quantitative integrated evaluation team.<br/> 8 A Right.<br/> 9 Q Was there certain quantitative data that<br/> 10 the team evaluated? 1:31PM<br/> 11 A Yes, so this team would build a<br/> 12 multidimensional subsurface model that, at the<br/> 13 reservoir, existed at a reservoir scale but overall<br/> 14 also existed at a geologic scale or even a basin<br/> 15 scale. 1:31PM<br/> 16 So it was a multidimensional model that<br/> 17 incorporated all the data. That's why it was called<br/> 18 integrated.<br/> 19 So it incorporated all the seismic<br/> 20 information, it incorporated all the geologic 1:31PM<br/> 21 information and it incorporated all of the well and<br/> 22 reservoir information and it did it at the level,<br/> 23 very detailed obviously at the reservoir and at a<br/> 24 much cruder level at the entire basin scale.<br/> 25 So it was a multi-scaled model. 1:32PM</p> <p style="text-align: right;">Page 65</p>  |

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| <p>1 Q Did the QIE team do reserve estimation? 1:32PM</p> <p>2 A Yes.</p> <p>3 Q On probabilistic basis?</p> <p>4 A Both probabilistic and deterministic.</p> <p>5 Q What was your personal role in that work? 1:32PM</p> <p>6 A My personal role was to teach the</p> <p>7 methodology to ensure it was being followed and to QC</p> <p>8 the results of the team.</p> <p>9 Q Again, using Shell's proprietary system?</p> <p>10 A Yes. 1:32PM</p> <p>11 Q And the QIE is not deployed at Anadarko;</p> <p>12 right?</p> <p>13 A No, it is not.</p> <p>14 Q Now, in 2004 you were the head of global</p> <p>15 training for deepwater risk assessment; is that 1:32PM</p> <p>16 right?</p> <p>17 A Yes.</p> <p>18 Q So fairly senior position within the</p> <p>19 company by that point?</p> <p>20 A Yes. 1:33PM</p> <p>21 Q So as a senior person at the company, were</p> <p>22 you aware that in 2004, Shell revealed it had</p> <p>23 overstated its reserves by 3.9 billion BOE?</p> <p>24 A I became aware of it.</p> <p>25 Q And so it's an overstatement of about 1:33PM</p> <p style="text-align: right;">Page 66</p>  | <p>1 A As a consultant, I use a methodology which 1:34PM</p> <p>2 is a combination of both my own experiences, the</p> <p>3 things I learned at Shell and the things I learned</p> <p>4 using our kinds of volumetric risking technologies</p> <p>5 that I have seen over my career. 1:35PM</p> <p>6 Q When you say your experience at Shell, are</p> <p>7 you talking about prior to the revelation of</p> <p>8 overstatement or what changed afterwards?</p> <p>9 A Well, the estimation of volumes and the</p> <p>10 risking of those volumes did not change substantially. 1:35PM</p> <p>11 What changed was the reporting of</p> <p>12 reserves. So volumes which were not reserves before</p> <p>13 that are had been reported as reserves. That's why</p> <p>14 they were overstated.</p> <p>15 It's not that the volumes did not exist, 1:35PM</p> <p>16 it's just that there was no plan to develop them, so</p> <p>17 you can't report them as reserves.</p> <p>18 Q So that aspect of Shell's proprietary</p> <p>19 approach did not change?</p> <p>20 A No. 1:36PM</p> <p>21 Q Okay. So between 2005 and 2008, you were</p> <p>22 a seismic manager; right?</p> <p>23 A Yes, in 2005 Hurricane Katrina wiped out the</p> <p>24 Shell office in New Orleans and there were some very</p> <p>25 substantial lease sales coming up in the Gulf of 1:36PM</p> <p style="text-align: right;">Page 68</p>  |
| <p>1 20 percent? 1:33PM</p> <p>2 A Yes, it was a -- it was an overstatement</p> <p>3 that there was -- by 20 percent, that's correct. Due</p> <p>4 to discovered volumes that were never taken forward to</p> <p>5 be declared reserves. 1:33PM</p> <p>6 Q That prompted an SEC investigation; right?</p> <p>7 A I believe so.</p> <p>8 Q And the SEC accused Shell of being</p> <p>9 excessively permissive on its reserve estimations?</p> <p>10 A Yes. I don't know what the SEC finally 1:33PM</p> <p>11 ruled. It did not involve any of the things I was</p> <p>12 working on, so...</p> <p>13 Q Were you aware of the allegations?</p> <p>14 A I was aware of them.</p> <p>15 Q Okay. And did Shell change its 1:34PM</p> <p>16 methodology after the investigation or litigation?</p> <p>17 A Shell changed its methodology in what you</p> <p>18 report as reserves, Shell did not change its</p> <p>19 methodology for how it calculated volumes or risking.</p> <p>20 It changed its reporting requirements and 1:34PM</p> <p>21 did it very significantly. Because we did reserves</p> <p>22 training at all levels of the company for many</p> <p>23 years, probably still do.</p> <p>24 Q Do you continue to use this methodology as</p> <p>25 a consultant? 1:34PM</p> <p style="text-align: right;">Page 67</p> | <p>1 Mexico within three to four years, and so I was yanked 1:36PM</p> <p>2 off of the existing role that I was and brought in to</p> <p>3 manage as exploration seismic manager for the Gulf of</p> <p>4 Mexico to prepare for the upcoming lease sales and</p> <p>5 transferred to Houston. 1:36PM</p> <p>6 Q Okay. So at that point you were no longer</p> <p>7 personally interpreting the seismic data; right?</p> <p>8 A Actually, I spent quite a bit of time</p> <p>9 interpreting seismic data because I had a team of</p> <p>10 about 130, 150 people working hard on developing an 1:37PM</p> <p>11 integrated seismic image of the entire Gulf of Mexico.</p> <p>12 So all the little seismic data sets shot</p> <p>13 all over the place, I was responsible for buying</p> <p>14 seismic that would fill them in. So I would sit</p> <p>15 there and sit with interpreters and interpret 1:37PM</p> <p>16 seismic data.</p> <p>17 We were responsible for building the salt</p> <p>18 interpretation across the entire Gulf of Mexico and</p> <p>19 we were responsible for -- actually proposed a new</p> <p>20 seismic acquisition method which was picked up by 1:37PM</p> <p>21 the industry and grew quite a bit after that, the</p> <p>22 idea of shooting wide-azimuth seismic.</p> <p>23 Q So you sat with the people who were</p> <p>24 interpreting the seismic; right?</p> <p>25 A Yes, I sat with them and looked at the 1:38PM</p> <p style="text-align: right;">Page 69</p> |

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| <p>1 workstation and interpreted the data next to them, 1:38PM</p> <p>2 yes.</p> <p>3 Q That project was seismic focused; right?</p> <p>4 You didn't run econ analysis on those -- that</p> <p>5 seismic project? 1:38PM</p> <p>6 A I was actually on the leadership team that</p> <p>7 then, when it came time for the lease sales, we had to</p> <p>8 evaluate the potential economics of every prospect and</p> <p>9 every fault block that was up for sale so that we</p> <p>10 could make a suitable bid at the lease sales. 1:38PM</p> <p>11 So I sat on that leadership team, yes.</p> <p>12 Q The leadership team, but you didn't do the</p> <p>13 underlying runs?</p> <p>14 A No, we had people who would run -- we had</p> <p>15 people that would run all the economic for every one 1:38PM</p> <p>16 of the prospects.</p> <p>17 Q From there you were in Nigeria; right?</p> <p>18 A Yes, 2008 I when to Nigeria as the</p> <p>19 Sub-Sahara geophysics manager.</p> <p>20 Q And so that was your role as a geophysics 1:39PM</p> <p>21 manager?</p> <p>22 A Well, it was actually more than geophysics</p> <p>23 because I was in -- also in charge of -- it was</p> <p>24 geophysics where geophysics was needed, but it was</p> <p>25 more reservoir engineering and planning for deepwater 1:39PM</p> <p style="text-align: right;">Page 70</p> | <p>1 A Correct. 1:41PM</p> <p>2 Q What was your responsibility there?</p> <p>3 A So I ran a research team of approximately 25</p> <p>4 people, 12 of which were in Houston in the U.S. and 13</p> <p>5 were in the Netherlands. 1:41PM</p> <p>6 And our job was multifold. We were</p> <p>7 looking at methodologies to monitor how fluids moved</p> <p>8 in a field.</p> <p>9 So we would we came up with systems that</p> <p>10 would watch oil move, would watch gas move, would 1:41PM</p> <p>11 watch water move, would watch steam move, would</p> <p>12 watch chemicals move.</p> <p>13 We came up with technologies that involved</p> <p>14 monitoring them with repeat seismic data to</p> <p>15 monitoring them with distributed acoustic fiber data 1:42PM</p> <p>16 in wells with vertical seismic profiles to</p> <p>17 monitoring them on an hourly basis with permanent</p> <p>18 systems that were continuous, running -- buried in</p> <p>19 the earth.</p> <p>20 So we had a number of -- also monitoring 1:42PM</p> <p>21 the deflection of the seafloor as production was</p> <p>22 done or monitoring the change in gravity due to</p> <p>23 extraction of fluids.</p> <p>24 So we had a whole series of technologies</p> <p>25 we were monitoring production with. 1:42PM</p> <p style="text-align: right;">Page 72</p> |
| <p>1 because Shell was -- needed someone to make a proposal 1:39PM</p> <p>2 as to how to develop a number of discoveries in</p> <p>3 deepwater.</p> <p>4 So I kind of like supervised the team who</p> <p>5 was doing the volumetrics, the risking and the 1:39PM</p> <p>6 economics.</p> <p>7 Q Right. So there were folks running those</p> <p>8 analyses?</p> <p>9 A Correct.</p> <p>10 Q Did you -- what work, if any, did you 1:40PM</p> <p>11 personally perform in preparing reserve reports?</p> <p>12 A Well, when I was working at Gulf of Mexico,</p> <p>13 I would -- certainly when I was a project manager at</p> <p>14 Enchilada and at Cinnamon, I was directly responsible</p> <p>15 for the reserve reports for those field, right. 1:40PM</p> <p>16 So would I sit there with a senior reserve</p> <p>17 person and generate the report that we would use for</p> <p>18 those fields.</p> <p>19 After that --</p> <p>20 Q I'm sorry, my question was about Nigeria. 1:40PM</p> <p>21 A Oh, in Nigeria, I did not -- I had no role</p> <p>22 in generating the reserve reports.</p> <p>23 Q Okay. Between 2012 and 2014, you were</p> <p>24 involved in research on reservoir surveillance;</p> <p>25 right? 1:41PM</p> <p style="text-align: right;">Page 71</p>   | <p>1 Q From there you left Shell; right? 1:43PM</p> <p>2 A Yes, I took full retirement.</p> <p>3 Q You founded your geophysical company?</p> <p>4 A Yes.</p> <p>5 Q Who are your clients? 1:43PM</p> <p>6 A So I had a range of clients, one of my</p> <p>7 clients continuously has been Shell, who hired me back</p> <p>8 immediately as a consultant. So I've been doing that</p> <p>9 and still -- they're still a client of mine. I have</p> <p>10 had a number of consultants in the oil and gas 1:43PM</p> <p>11 industry.</p> <p>12 I've had a few consultants that were</p> <p>13 investment firms who needed information about</p> <p>14 expectations about what will happen in the oil and</p> <p>15 gas industry. 1:43PM</p> <p>16 Then I had a number of companies who have</p> <p>17 equipment from an engineering perspective that I am</p> <p>18 very familiar with that hired me around patents and</p> <p>19 patent issues. So it's a range of clients. I try</p> <p>20 not to work too hard. 1:44PM</p> <p>21 Q All right. Let's turn to --</p> <p>22 MS. JENSEN: I'm going to mark an exhibit</p> <p>23 here. So bear with me.</p> <p>24 You should be able to see what we've</p> <p>25 marked for identification as Exhibit 528. 1:45PM</p> <p style="text-align: right;">Page 73</p>                                    |

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| <p>1 (Whereupon, Exhibit 528 was marked for 1:45PM<br/>2 identification.)</p> <p>3 MS. JENSEN: This, for the record, is a<br/>4 native file produced by the defendants in this case<br/>5 with the Bates number APC-01314375. 1:45PM</p> <p>6 THE WITNESS: I see it.</p> <p>7 BY MS. JENSEN:</p> <p>8 Q Have you seen this document before?</p> <p>9 A I'm trying to get the slide bar to work.</p> <p>10 Q So this time -- 1:46PM</p> <p>11 A I recognize the first page. I believe this<br/>12 was from a presentation by Anadarko internally.</p> <p>13 Q So you've seen this before?</p> <p>14 A I think so. I can't cannot -- I haven't --<br/>15 well, again, this looks like ones you have to flip 1:46PM<br/>16 through the slide one at a time. But yes, it looks<br/>17 familiar.</p> <p>18 Q And so for the record, the custodian of<br/>19 this document, even though you can't see it on the<br/>20 document itself, is Paul Chandler. 1:46PM</p> <p>21 Do you know who he is?</p> <p>22 A I do.</p> <p>23 Q Okay. Who's Paul Chandler?</p> <p>24 A Paul Chandler was one of the, I think,<br/>25 senior reservoir engineers I think at -- either 1:46PM</p> <p style="text-align: right;">Page 74</p>  | <p>1 A Under -- 1:48PM</p> <p>2 Q That area within Anadarko?</p> <p>3 A No, I'm not familiar with different areas of<br/>4 storage at Anadarko.</p> <p>5 Q I'm talking about different groups. 1:48PM</p> <p>6 A Which group was it with?</p> <p>7 Q Fold belt.</p> <p>8 A Full?</p> <p>9 Q Fold belt?</p> <p>10 A Oh, fold belt, yes. I wasn't familiar with 1:48PM<br/>11 that, but I'm a little surprised because this would<br/>12 not typically be considered being in the fold belt.<br/>13 But okay.</p> <p>14 Q Now it's titled "Shenandoah: Sizing It<br/>15 Right a Retrospective" from July 8th, 2017. 1:49PM</p> <p>16 This isn't long after Shenandoah was<br/>17 written off; correct?</p> <p>18 A I don't believe Shenandoah was written off.<br/>19 So I think -- but I think the date is correct.</p> <p>20 Q So you're not familiar with Shenandoah 1:49PM<br/>21 being written off at Anadarko?</p> <p>22 A Shenandoah took write-offs, but they didn't<br/>23 write off the entire field.</p> <p>24 Q Okay. So it's your testimony that<br/>25 Anadarko did not write off the entire field? 1:49PM</p> <p style="text-align: right;">Page 76</p>                                    |
| <p>1 reservoir engineer or geologist on the development 1:46PM<br/>2 side.</p> <p>3 Q So just to clarify for you, geologist --<br/>4 what is the difference between a geologist and a<br/>5 petroleum engineer? 1:47PM</p> <p>6 A Well, the real difference is whatever their<br/>7 job responsibilities are assigned to be. So in terms<br/>8 of training, they may have come from a whole variety<br/>9 of backgrounds.</p> <p>10 But a petroleum engineer is responsible 1:47PM<br/>11 for defining how the hydrocarbons is going to get<br/>12 out of the reservoir and through the production<br/>13 system, right?</p> <p>14 So they are responsible for things like<br/>15 what kind of completion, what size tubing, you know, 1:47PM<br/>16 all of the stuff that is going to get engineered<br/>17 from the reservoir to a delivery system, a pipe<br/>18 eventually.</p> <p>19 The reservoir engineer is responsible for<br/>20 what happens in the reservoir in terms of how do 1:48PM<br/>21 fluids move in the reservoir, how much of it will<br/>22 move out and what rate will it move at.</p> <p>23 Q So this file was saved on Anadarko's<br/>24 network under fold belt.</p> <p>25 Are you familiar with that? 1:48PM</p> <p style="text-align: right;">Page 75</p> | <p>1 A Yes. 1:49PM</p> <p>2 Q Okay. And if you're wrong, does that<br/>3 change any of your opinions?</p> <p>4 A No.</p> <p>5 Q You're aware what a write-off is; right? 1:50PM</p> <p>6 A Yes, they took write-offs -- from my<br/>7 awareness, they took write-offs of certain wells and<br/>8 expenditures that had been on their books. But I<br/>9 don't believe the field was written off to completely<br/>10 to zero. So I don't recall seeing that at this point 1:50PM<br/>11 in time.</p> <p>12 Q Let's turn to the final slide. This one I<br/>13 do think you have to click every time.</p> <p>14 A Yes, I kind of guessed that, so I'm up to<br/>15 like -- the good news is you can click as fast as you 1:50PM<br/>16 want.</p> <p>17 Q I'm there. Tell me when you're there.</p> <p>18 A I'm there.</p> <p>19 Q Okay. Do you see the heading here,<br/>20 "Shenandoah - Takeaways"? 1:51PM</p> <p>21 A Yes.</p> <p>22 Q So do you understand this to be the<br/>23 takeaways from what was learned at Shenandoah?</p> <p>24 A Yes, it was a presentation that was given<br/>25 internally in the company to talk about what their 1:51PM</p> <p style="text-align: right;">Page 77</p> |

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| <p>1 view looking back was. It's kind of a look-back. 1:51PM</p> <p>2 Q A look-back or a lessons learned; right?</p> <p>3 A Yes, lessons learned would be a little</p> <p>4 different, but I would call it a look-back.</p> <p>5 Q Okay. Well, the first line here, "Never 1:51PM</p> <p>6 discount an interpretation because it seems wrong or</p> <p>7 different. All interpretations are wrong until</p> <p>8 proven otherwise."</p> <p>9 Would that be a lesson learned?</p> <p>10 A Usually a lesson learned has a 1:51PM</p> <p>11 recommendation for the future.</p> <p>12 So you could -- because I actually work in</p> <p>13 capturing lessons learned.</p> <p>14 But in terms of what happened, I would</p> <p>15 agree with that. 1:52PM</p> <p>16 Q It says, "Never discount an</p> <p>17 interpretation"; right? That's kind of an</p> <p>18 instruction for the future?</p> <p>19 A Correct.</p> <p>20 Q That's it; right? 1:52PM</p> <p>21 A Okay.</p> <p>22 Q And the discount interpretations here were</p> <p>23 the predevelopment's faulted maps; right?</p> <p>24 A The discounted interpretations are every</p> <p>25 interpretation because the final interpretation is yet 1:52PM</p> <p style="text-align: right;">Page 78</p>   | <p>1 Before Shen 3, development had put faults 1:54PM</p> <p>2 on the map that exploration had not put on their</p> <p>3 map.</p> <p>4 Q So the second line, "If you have</p> <p>5 undesirable or inclusive data, don't ignore it. 1:54PM</p> <p>6 Factor it into your range of uncertainty."</p> <p>7 So this indicates that from Paul</p> <p>8 Chandler's view, that they -- that the company had</p> <p>9 ignored undesirable or inconclusive data such as</p> <p>10 faulting; right? 1:54PM</p> <p>11 MS. PHILLIPS: Objection as to form.</p> <p>12 THE WITNESS: I believe exploration was</p> <p>13 taking faulting into account, because they were</p> <p>14 accounting for it in lowering their recovery factor.</p> <p>15 What they didn't do was put faults on the 1:55PM</p> <p>16 map which would later turn out to be wrong.</p> <p>17 BY MS. JENSEN:</p> <p>18 Q Okay. So from this perspective, so I</p> <p>19 understand that you've got your view on it, but this</p> <p>20 indicates that the lessons learned was that the 1:55PM</p> <p>21 undesirable data should be factored into the range</p> <p>22 of uncertainty?</p> <p>23 MS. PHILLIPS: Objection as to form.</p> <p>24 THE WITNESS: Yes, this doesn't say what</p> <p>25 the undesirable or inconclusive data is. 1:55PM</p> <p style="text-align: right;">Page 80</p> |
| <p>1 to be -- yet to be determined. 1:52PM</p> <p>2 Q And Paul Chandler had interpretations on</p> <p>3 Shenandoah pretty early on; right?</p> <p>4 A Yes, he did.</p> <p>5 Q And his were discounted; correct? 1:52PM</p> <p>6 A Not sure they were discounted. I think they</p> <p>7 were considered, but there are many interpretations</p> <p>8 and as it says, don't discount them because they are</p> <p>9 all wrong. So...</p> <p>10 Q So you are aware that in this case, the 1:53PM</p> <p>11 development team had faults on their maps that were</p> <p>12 not accepted by the company?</p> <p>13 A At what time frame are you talking?</p> <p>14 Q I'm talking about 2014, 2015 in</p> <p>15 particular. 1:53PM</p> <p>16 A Yes, well, after Shen 4, the development</p> <p>17 team took over, so whatever faults they had on the map</p> <p>18 were accepted.</p> <p>19 Q So I'm talking about the time frame of</p> <p>20 early -- of 2014 through 2015, so the answer to my 1:53PM</p> <p>21 question is yes; right?</p> <p>22 A So after Shen 3, exploration put a fault on</p> <p>23 their map before -- and exploration was in charge of</p> <p>24 the development -- in charge of the evaluation, the</p> <p>25 appraisal. 1:54PM</p> <p style="text-align: right;">Page 79</p> | <p>1 BY MS. JENSEN: 1:55PM</p> <p>2 Q Right. And you're not aware of what Paul</p> <p>3 Chandler was advocating for throughout the class</p> <p>4 period in terms of the data?</p> <p>5 A No, I'm aware of what Paul Chandler was 1:55PM</p> <p>6 advocating for, but just as the first line said, he</p> <p>7 was advocating for his interpretation but all</p> <p>8 interpretations are wrong until proven otherwise.</p> <p>9 Q So let's look at Number 3,</p> <p>10 "Compartmentalization is the bane of most deepwater 1:55PM</p> <p>11 developments that fail."</p> <p>12 So this expresses the belief that</p> <p>13 Shenandoah failed because of compartmentalization;</p> <p>14 correct?</p> <p>15 A Shenandoah hasn't started producing yet, so 1:56PM</p> <p>16 it's not clear whether or not it failed or not. But</p> <p>17 compartmentalization is an issue that has to be</p> <p>18 accounted for, yes.</p> <p>19 Q So that's not my question, though. If you</p> <p>20 could focus on my question. 1:56PM</p> <p>21 In this instance he's saying -- expressing</p> <p>22 the view that Shenandoah failed at that time because</p> <p>23 of compartmentalization; correct?</p> <p>24 MS. PHILLIPS: Objection as to form.</p> <p>25 THE WITNESS: No, he just said 1:56PM</p> <p style="text-align: right;">Page 81</p>              |



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| <p>1 compartmentalization is the bane of most deepwater 1:56PM<br/>2 developments that fail.<br/>3 So he doesn't characterize Shenandoah as<br/>4 being one of those or not.<br/>5 BY MS. JENSEN: 1:56PM<br/>6 Q Do you see at the bottom of this page -- I<br/>7 think you said earlier that you didn't think that<br/>8 Anadarko wrote off the field.<br/>9 Do you see the reference here to May 2017,<br/>10 Anadarko wrote off \$902 million associated with 1:56PM<br/>11 Shenandoah?<br/>12 A Yes.<br/>13 Q Okay. And so does that refresh your<br/>14 recollection that Anadarko wrote off the entire<br/>15 field? 1:57PM<br/>16 A I don't see there -- it says "associated<br/>17 with Shenandoah," it doesn't say 902 million<br/>18 Shenandoah field. So this is 902 million associated<br/>19 with it. So it's part of it, yes, they did write off<br/>20 part of it. 1:57PM<br/>21 Q So you think there's some part of the<br/>22 field that was not written off? So in other words,<br/>23 you think there was some amount of money that goes<br/>24 beyond \$902 million?<br/>25 A Yes. 1:57PM</p> <p style="text-align: right;">Page 82</p>                                | <p>1 (Recess taken.) 2:00PM<br/>2 THE VIDEOGRAPHER: Back on the record.<br/>3 It's 2:02 p.m.<br/>4 BY MS. JENSEN:<br/>5 Q Dr. Detomo, would you please turn to 2:02PM<br/>6 slide 3 of this same document. So it's going to<br/>7 require some quick clicking.<br/>8 A You don't think you can just click on the<br/>9 end and it go to the front?<br/>10 Q If you can do that, that's fine. I don't 2:02PM<br/>11 think so, though.<br/>12 A No, you're right.<br/>13 Slide 3.<br/>14 Q Okay. So do you see -- do you see the<br/>15 same thing I see, which is "Shenandoah - Historic 2:03PM<br/>16 Overview"?<br/>17 A Yes.<br/>18 Q And there are several stars, the biggest<br/>19 star is on the right-hand side of the slide?<br/>20 A Yes. 2:03PM<br/>21 Q And it's a slide -- again, this is in<br/>22 2017, but then there's a -- also the year 2018 is<br/>23 listed in this timeline?<br/>24 A Yes.<br/>25 Q Okay. And under it says, "APC elects to 2:03PM</p> <p style="text-align: right;">Page 84</p>                              |
| <p>1 Q And what is that based on? 1:57PM<br/>2 A That's based upon the fact that the --<br/>3 Anadarko did not write off all of the wells. They did<br/>4 not write off -- they wrote off a series of wells,<br/>5 okay, but not all of it. 1:58PM<br/>6 So they still thought the field had value.<br/>7 They just were not prepared to pursue it.<br/>8 Q And so if they did write off the entire<br/>9 amount, that would indicate the converse, which is<br/>10 that they thought that Shenandoah had no value; 1:58PM<br/>11 correct?<br/>12 MS. PHILLIPS: Objection.<br/>13 THE WITNESS: No -- sorry. If they wrote<br/>14 off the whole thing eventually, it just means that<br/>15 they did not have the means to pursue it. 1:58PM<br/>16 BY MS. JENSEN:<br/>17 Q But your testimony is they did not write<br/>18 off the entire thing?<br/>19 A At this point in May of 2017, they had not<br/>20 written off the entire thing. 1:58PM<br/>21 Q Bear with me for a moment.<br/>22 MS. JENSEN: I apologize, we need to go<br/>23 off the record for a moment.<br/>24 THE VIDEOGRAPHER: Off the record. It's<br/>25 1:59 p.m. 2:00PM</p> <p style="text-align: right;">Page 83</p> | <p>1 withdraw from project completely due to reserve size 2:03PM<br/>2 and risk."<br/>3 Do you see that?<br/>4 A Yes.<br/>5 Q Okay. No reason to dispute that; correct? 2:03PM<br/>6 A No.<br/>7 Q You can set this aside.<br/>8 A I should point out that was way after May of<br/>9 2017.<br/>10 Q That didn't refer to a write-down, did it? 2:04PM<br/>11 A I'm referring back to the last question you<br/>12 had asked before we went off. You had asked about May<br/>13 2017.<br/>14 Q Right. And this one under 2018, it<br/>15 doesn't say anything about write-off, does it? 2:04PM<br/>16 A No, but in November of 2017, they proposed<br/>17 Well Number 7, so...<br/>18 Q We're kind of running off course here.<br/>19 So, Dr. Detomo, if you could just focus on my<br/>20 questions, answer those questions. 2:04PM<br/>21 A Okay.<br/>22 Q Let's try to kind of stick with the<br/>23 program so that we don't get lost on frolics and<br/>24 detours; okay?<br/>25 A Okay. 2:04PM</p> <p style="text-align: right;">Page 85</p> |

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| 1 Q Let's turn now to slide 55. 2:04PM                   | 1 A Yes, that's what the chart says. 2:14PM                 |
| 2 A You're going to wear out my finger.                  | 2 Q Do you agree that after Shen 3 and Yucatan              |
| 3 Q Yes, mine too.                                       | 3 were drilled, the mean resource reduced to                |
| 4 A Yes.   | 4 920 MMBOE?  |
| 5 Q Do you see here there is a chart and it 2:05PM       | 5 A Yes, that's what is on this slide. 2:14PM               |
| 6 says, "Shenandoah Resource Estimate Through Time"?     | 6 Q And the fault model goes down to                        |
| 7 A Yes.   | 7 740 MMBOE?  |
| 8 Q Do you recognize this to be an evolution             | 8 A Yes.  |
| 9 of Shenandoah's resource size over time?               | 9 Q Okay. After Shen 4, the joint estimate                  |
| 10 A Yes. 2:05PM   | 10 post RCT review was 425 MMBOE? 2:14PM                    |
| 11 Q What is the relationship of a mean -- of            | 11 A Wait a minute. I'm working my way down.                |
| 12 the mean of a probability distribution? This would    | 12 So the fault model post Shen 3, Yuc 2 was                |
| 13 be the entire distribution.                           | 13 740. The post-drill Shen 4 was 754. Fault model          |
| 14 A The mean represents the weighted average of         | 14 east fault block 590 and 85 percent to 550.              |
| 15 being effectively in the middle. 2:06PM               | 15 So joint exploration after Shen 4, 425, 2:15PM           |
| 16 Q The mean of a probability distribution,             | 16 yes.   |
| 17 can it be used to characterize the distribution?      | 17 Q And post Shen 5 goes down to 353?                      |
| 18 A It's one of the ways one could characterize         | 18 A Correct.   |
| 19 it, yes.  | 19 Q And post Shen 6 goes down to 250 MMBOE?                |
| 20 Q So if the mean of a probability 2:06PM              | 20 A Post Shen 6 development quick-look, 249. 2:15PM        |
| 21 distribution decreases over time, it's an indication  | 21 Q Okay. MMBOE; right?                                    |
| 22 that the distribution is decreasing; correct?         | 22 A Excuse me. I need to check. I'm not sure               |
| 23 A It doesn't mean that the -- it depends on           | 23 if they aren't quoting MMBO or MMBOE. Let me check.      |
| 24 the range of the distribution, what the range of the  | 24 Q If you look right underneath -- it's kind              |
| 25 distribution is doing as well. 2:06PM                 | 25 of faint but right under those bars you see gross 2:16PM |
| Page 86  | Page 88   |
| 1 Q Okay. But it can be an indication that 2:06PM        | 1 resource, MMBOE? 2:16PM                                   |
| 2 the distribution is decreasing; correct?               | 2 A I see MMBOE under all the bars before                   |
| 3 A It can be one indication that the                    | 3 Shen 4. But below that I don't actually see MMBOE, I      |
| 4 distribution could be decreasing.                      | 4 just see mean and there's nothing written underneath      |
| 5 Q Okay. So looking at this chart, you see 2:06PM       | 5 it. 2:16PM  |
| 6 that the mean of exploration's resource distribution   | 6 So unless it's in a strange color and I                   |
| 7 for Shenandoah was 1200 MMBOE after Shen 2? You may    | 7 can't see it.   |
| 8 need to zoom in.                                       | 8 Q It's in a gray.   |
| 9 A I was just looking for that.                         | 9 A Is it in the bar? I don't see it.                       |
| 10 Let me see if I can find where the zoom 2:07PM        | 10 Q It's right underneath them. 2:17PM                     |
| 11 is. Is there a way to zoom in?                        | 11 A Unfortunately, in my version of the view               |
| 12 MS. JENSEN: Let's go off the record.                  | 12 graph, I see the P99, P90 mean, P10, P1 and the bar      |
| 13 THE VIDEOGRAPHER: We're off the record.               | 13 underneath. There's nothing on the blue in the bar,      |
| 14 It's 2:07 p.m.  | 14 so PowerPoint color.                                     |
| 15 (Recess taken.) 2:07PM                                | 15 Q So I'll just represent to you that below 2:17PM        |
| 16 THE VIDEOGRAPHER: Back on the record.                 | 16 those bars in gray is gross resources MMBOE.             |
| 17 It's 2:13 p.m.  | 17 A Okay. If it says MMBOE.                                |
| 18 BY MS. JENSEN:  | 18 Q You're aware that after Shen 6, it went                |
| 19 Q Welcome back. I believe that you can see            | 19 down to 150 MMBO?  |
| 20 the numbers now on this chart. So I'll ask you 2:13PM | 20 A I'm aware that after Shen 6, they -- that it 2:17PM    |
| 21 about some of them.                                   | 21 did lower -- after they went ahead and got all the       |
| 22 So looking at the bars in this chart, kind            | 22 data from Shen 6, Shen 6 sidetrack, et cetera, that      |
| 23 of in the middle of this slide, do you agree that     | 23 they it did go down again. So I don't recall exactly     |
| 24 the mean of exploration's resource distribution was   | 24 what the number was.                                     |
| 25 1200 MMBOE post Shen 2? 2:14PM                        | 25 Q In any event, we're talking a drop in the 2:18PM       |
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| <p>1 mean resource from 1200 MMBOE to less than 200 MMBO 2:18PM</p> <p>2 over time?</p> <p>3 A Yes.</p> <p>4 Q About an 85 percent reduction; right?</p> <p>5 A That's the purpose of an appraisal is to 2:18PM</p> <p>6 narrow the range, yes.</p> <p>7 MS. JENSEN: I'm going to strike that</p> <p>8 answer. It's nonresponsive.</p> <p>9 Q I'm just asking you: It's 85 percent</p> <p>10 reduction; right? 2:18PM</p> <p>11 A Just a second. From 1200 -- 85 percent</p> <p>12 would be -- yes, that's pretty close to it. I would</p> <p>13 say pretty close to 85 percent, yes.</p> <p>14 Q Okay. You can set this aside and back out</p> <p>15 of it. 2:19PM</p> <p>16 A Okay.</p> <p>17 Q In your report you criticize</p> <p>18 Mr. Pittinger's analysis of commerciality saying the</p> <p>19 calculation of expected value alone is incomplete.</p> <p>20 Can you define the term "expected value"? 2:19PM</p> <p>21 A Yes, expected value would be -- the way I</p> <p>22 would define "expected value" would be the integration</p> <p>23 of the probability of occurrence times the likely</p> <p>24 volume for that occurrence.</p> <p>25 Q Okay. And do you have a source for that 2:19PM</p> <p style="text-align: right;">Page 90</p>  | <p>1 probability of the 50 percent volume, multiply those 2:21PM</p> <p>2 together, add them all up and divide. And that</p> <p>3 would give you a crude estimate of expected value.</p> <p>4 So...</p> <p>5 Now, that only gives you the expected 2:22PM</p> <p>6 value of volume. It doesn't give you expected value</p> <p>7 in terms of what the economics look like.</p> <p>8 Q So what would be the equation for expected</p> <p>9 value in economics?</p> <p>10 A Now, that gets a lot more complicated 2:22PM</p> <p>11 because if you only have the P90 value, in other</p> <p>12 words, you had a small volume, you would build a small</p> <p>13 development.</p> <p>14 If you had the P10, a big field, you would</p> <p>15 build a big development. And so the cost for each 2:22PM</p> <p>16 of those are different.</p> <p>17 And I didn't see Anadarko ever doing that</p> <p>18 calculation calculating what the costs for different</p> <p>19 size developments for different size volumes would</p> <p>20 be. 2:22PM</p> <p>21 So they only did it based upon the --</p> <p>22 either the P50 or the median value.</p> <p>23 Q Okay. So you're not aware of an expected</p> <p>24 value equation?</p> <p>25 A Expected value equation for value? 2:23PM</p> <p style="text-align: right;">Page 92</p>  |
| <p>1 definition? Is there an industry source or 2:20PM</p> <p>2 literature source you can cite?</p> <p>3 A I don't have one off the top of my head.</p> <p>4 But I think if you look up "expected value," that's</p> <p>5 what you're going to see. 2:20PM</p> <p>6 Q What is the formula for expected value?</p> <p>7 A Probably the integration of the likelihood</p> <p>8 times the volume normalized to the total possibility.</p> <p>9 Q There is a formula; right? There is an</p> <p>10 actual mathematical equation? 2:20PM</p> <p>11 A There is.</p> <p>12 Q And what is it?</p> <p>13 A I think it's going to be an integral from</p> <p>14 zero to 100 percent of the risk. So that would be a</p> <p>15 value times the actual volume and then that integral 2:20PM</p> <p>16 normalized by the total would be the expected value.</p> <p>17 So it's going to look like an integral from zero to</p> <p>18 100 times risk times that DX.</p> <p>19 So yes, there is a formula for it. I</p> <p>20 don't know anybody that really calculates that way, 2:21PM</p> <p>21 but that is the formula.</p> <p>22 The cheap and easy way do it is to take a</p> <p>23 10 percent probability of the 10 percent volume, a</p> <p>24 90 percent probability of the 90 percent likelihood</p> <p>25 volume, which would be the P10, and the 50 percent 2:21PM</p> <p style="text-align: right;">Page 91</p> | <p>1 Q Yes. 2:23PM</p> <p>2 A I could write the equation for it, but I'm</p> <p>3 not aware of it ever having been done.</p> <p>4 Q So what would be the equation?</p> <p>5 A Okay. So for each of the -- for each of the 2:23PM</p> <p>6 volumes, you have to have a development cost. So</p> <p>7 for -- if you're going to do it on say every percent,</p> <p>8 you would have to have a development cost.</p> <p>9 So what is the development cost associated</p> <p>10 with P10? What's the development cost associated 2:23PM</p> <p>11 with P50? What is the development cost associated</p> <p>12 with P90? What is the development cost for every</p> <p>13 one of those in between, because there may be places</p> <p>14 where you change the development, you might change</p> <p>15 number of wells, you might change the size of the 2:23PM</p> <p>16 platform, you might change the size of the pipe.</p> <p>17 And then if you have a cost for every one</p> <p>18 of those, then you could go through and do the</p> <p>19 economics for every one of them.</p> <p>20 Basically you would have to do the 2:24PM</p> <p>21 economics for each of those and then add them all</p> <p>22 up.</p> <p>23 Q So you referred earlier to Rose &amp;</p> <p>24 Associates; right?</p> <p>25 A Yes. 2:24PM</p> <p style="text-align: right;">Page 93</p> |

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| <p>1 Q Rose &amp; Associate is the industry leader in 2:24PM<br/>2 resource assessment with uncertainty; correct?<br/>3 A I have no knowledge of them being an<br/>4 industry leader. There's actually, as far as I know,<br/>5 very few companies that actually use it. 2:24PM<br/>6 Q So you don't think it's an industry<br/>7 leader?<br/>8 A No, I do not.<br/>9 MS. JENSEN: I've introduced into the<br/>10 record a document which has been marked as 2:24PM<br/>11 Exhibit 529 for identification. So you should be<br/>12 able to see this.<br/>13 (Whereupon, Exhibit 529 was marked for<br/>14 identification.)<br/>15 THE WITNESS: Okay. Just a minute. 2:24PM<br/>16 MS. JENSEN: For the record, this is an<br/>17 article called "The Role of the Engineer in<br/>18 Exploration: Expected Value." And this is from<br/>19 Rose &amp; Associates.<br/>20 THE WITNESS: Which number? I got it. 2:25PM<br/>21 Okay.<br/>22 BY MS. JENSEN:<br/>23 Q 529.<br/>24 A 529. Got it.<br/>25 Q Have you seen this before? 2:25PM</p> <p style="text-align: right;">Page 94</p>  | <p>1 A I think you need that role. Whether or not 2:26PM<br/>2 that's the role of the reservoir engineer or the role<br/>3 of somebody else like an economics or a financial<br/>4 person depends upon the company.<br/>5 Q Further down into this article it talks 2:26PM<br/>6 about the importance of running these expected value<br/>7 equations. And it says, "If the expected value is<br/>8 positive, the project is an investment candidate, if<br/>9 it's negative, we're gambling. We can still invest<br/>10 in a project with a negative expected value, but 2:27PM<br/>11 likely we're going to lose money, and we'll<br/>12 certainly lose if we invest in enough of them."<br/>13 Do you agree with that statement?<br/>14 A If you knew exactly what the commercial<br/>15 success volume was, yes. But the problem is you don't 2:27PM<br/>16 ever know what that value is.<br/>17 And if you say that you are investing<br/>18 based solely upon that value, that that's also not<br/>19 true. Because there are many other things that come<br/>20 into account to decide whether or not you invest, 2:27PM<br/>21 sometimes even at a loss.<br/>22 I was involved in a project where we<br/>23 invested in Saudi Arabia at a loss in order to have<br/>24 country entry. So you make investments for lots of<br/>25 different reasons. 2:28PM</p> <p style="text-align: right;">Page 96</p> |
| <p>1 A No. 2:25PM<br/>2 Q So there's an expected value equation<br/>3 here.<br/>4 Do you see that?<br/>5 A I do. 2:25PM<br/>6 Q Any reason to dispute that that's the<br/>7 equation for expected value?<br/>8 A The thing I would argue is it's an estimate<br/>9 of expected value and it says underneath, "It's a very<br/>10 simple equation." 2:25PM<br/>11 Q But otherwise, no reason to dispute?<br/>12 A As an estimate of expected value, no, I<br/>13 think it's fine. It has probability chance times the<br/>14 expected value, et cetera, so...<br/>15 Q Also in this article it talks about the 2:26PM<br/>16 role of an engineer and says, "an engineer's role in<br/>17 exploration is to quantify. Geoscientists make<br/>18 interpretations of data and then engineers turn<br/>19 those interpretations into resource and economic<br/>20 assessments. The ultimate goal is to generate an 2:26PM<br/>21 inventory of opportunities that can be high graded,<br/>22 allowing investment in those that are the most<br/>23 financially worthy."<br/>24 You don't have any reason to disagree with<br/>25 what's stated there; correct? 2:26PM</p> <p style="text-align: right;">Page 95</p> | <p>1 Q There is a reference in here to full-cycle 2:28PM<br/>2 costs and that's the right way to run economics;<br/>3 right?<br/>4 A Can you tell me where you're talking about?<br/>5 What page? 2:28PM<br/>6 Q Yes, give me just one second. Hold on<br/>7 just one second. I have a tech issue. Hold on.<br/>8 Okay. It's been resolved. If you turn<br/>9 down to Page 2 of this article.<br/>10 A Yes. 2:29PM<br/>11 Q So near the bottom, it talks about the NPV<br/>12 calculation?<br/>13 A Yes.<br/>14 Q And it says that it "accounts for all<br/>15 production (therefore revenue) and all costs and 2:30PM<br/>16 expenses over the life of the field."<br/>17 A Yes.<br/>18 Q Okay?<br/>19 A Yes.<br/>20 Q So in other words, full cycle costs should 2:30PM<br/>21 be inputted; right?<br/>22 A Yes, but I'm getting a little -- while you<br/>23 were waiting, I read this article, so this article<br/>24 appears to apply to an exploration well. So I'm a<br/>25 little confused that their calculations and their 2:30PM</p> <p style="text-align: right;">Page 97</p>  |

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| <p>1 equations only apply to one probability and one 2:30PM</p> <p>2 particular volume, not a range of them.</p> <p>3 Q So you can set that aside.</p> <p>4 In your report you said that "the</p> <p>5 calculation of expected value, alone, is 2:30PM</p> <p>6 incomplete."</p> <p>7 What do you mean by "incomplete" in that</p> <p>8 context?</p> <p>9 A Can you tell me where you're referencing in</p> <p>10 my report? 2:31PM</p> <p>11 Q Sure. So Paragraph 64.</p> <p>12 A Fifty-four?</p> <p>13 Q Sixty-four.</p> <p>14 A Sixty-four. Could you ask your question</p> <p>15 again then? 2:31PM</p> <p>16 Q You said that it's incomplete, the</p> <p>17 calculation of expected value alone is incomplete.</p> <p>18 What did you mean?</p> <p>19 A The assumption is he assumes if you do the</p> <p>20 calculation at the single P50 value with the P50 cost, 2:32PM</p> <p>21 if that doesn't meet some commercial threshold, that</p> <p>22 it's not commercial. But that's not true.</p> <p>23 Because you've ignored the uncertainty in</p> <p>24 the range of the volumetrics and the uncertainty</p> <p>25 associated with the cost. 2:32PM</p> <p style="text-align: right;">Page 98</p>   | <p>1 So if I -- the way to improve the 2:34PM</p> <p>2 economics of a project is to either sell more at a</p> <p>3 higher price -- in other words, make more money --</p> <p>4 reduce cost or get it earlier.</p> <p>5 Q So are you saying that the expected value 2:34PM</p> <p>6 calculation does not take into account costs?</p> <p>7 A No, the expected value here only took into</p> <p>8 account one set of estimated costs and one estimated</p> <p>9 volume. It did not take into account the range.</p> <p>10 For instance, would Mr. Pittinger assume 2:35PM</p> <p>11 that if I took these costs and applied it to the P10</p> <p>12 value, would that be economic? And so, you know,</p> <p>13 it's an incomplete analysis.</p> <p>14 Q Okay. In Paragraph 68 you say that each</p> <p>15 partner had their own resource number; is that 2:35PM</p> <p>16 right, some higher, some lower?</p> <p>17 A Yes, they all calculated resources</p> <p>18 independently.</p> <p>19 Q But all the other partner estimates of</p> <p>20 Shen mean resource sizes were smaller than Anadarko 2:35PM</p> <p>21 exploration; correct?</p> <p>22 A I would have to revisit the chart showing</p> <p>23 how they all compare.</p> <p>24 Q Okay. In fact, the partner volumes and</p> <p>25 Anadarko development were less than half of 2:36PM</p> <p style="text-align: right;">Page 100</p> |
| <p>1 So just because that volume might not be 2:32PM</p> <p>2 economic with a certain set of assumptions on cost,</p> <p>3 if I were to change the assumptions on cost, that</p> <p>4 volume may be very economic.</p> <p>5 And given the range of volume, there may 2:32PM</p> <p>6 be many volumes that are very economic.</p> <p>7 So it's an incomplete assessment of value.</p> <p>8 Q And so is your critique there that you</p> <p>9 think costs should be included?</p> <p>10 A In order to calculate -- yes, I think in 2:33PM</p> <p>11 order to calculate a field's -- whether or not you're</p> <p>12 going to develop a field, you have to reduce the</p> <p>13 uncertainty to the point that you have a high level of</p> <p>14 confidence that it's going to be economic at most, if</p> <p>15 not all the ranges of what the outcomes are likely to 2:33PM</p> <p>16 be.</p> <p>17 Q So how does expected value exclude or</p> <p>18 include costs?</p> <p>19 A Well, if you're talking about expected</p> <p>20 value, the value depends upon the cost. If I 2:34PM</p> <p>21 calculate the return on investment, the return on</p> <p>22 investment has two parts -- has three parts to it.</p> <p>23 One part is how much income do you get.</p> <p>24 One part is how much money do you have to spend, and</p> <p>25 the third part is what is the time in between those. 2:34PM</p> <p style="text-align: right;">Page 99</p> | <p>1 explorations estimated post Shen 3; correct? 2:36PM</p> <p>2 A I would have to see the values for what they</p> <p>3 were post Shen 3.</p> <p>4 Q Okay. But sitting here, you don't have</p> <p>5 any reason to dispute that; right? 2:36PM</p> <p>6 A I don't have any reason to agree or disagree</p> <p>7 with that because I don't know off the top of my head</p> <p>8 the exact numbers for both of them post Shen 3.</p> <p>9 Q The Anadarko exploration research</p> <p>10 estimates were much higher than other partners; 2:36PM</p> <p>11 right?</p> <p>12 A I seem to recall that they were in at least</p> <p>13 a number of cases higher. I don't know if they were</p> <p>14 always higher or if there were times where they were</p> <p>15 lower. 2:37PM</p> <p>16 Remember, when you say resource estimates,</p> <p>17 I'm not sure if you're talking about the whole range</p> <p>18 of estimates or if you're talking about a P50 or a</p> <p>19 P90 or a P10.</p> <p>20 Q I said mean. 2:37PM</p> <p>21 A Okay. The mean. So the mean, I think there</p> <p>22 were a number of times where Anadarko's were lower</p> <p>23 than at least some of the partners, yes.</p> <p>24 Q Okay. Now, as to the Shenandoah partners,</p> <p>25 which ones were partners during the class period? 2:37PM</p> <p style="text-align: right;">Page 101</p>                        |

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| <p>1 A ConocoPhillips was a partner. Venari was a 2:37PM<br/> 2 partner. Cobalt was a partner and then Marathon was a<br/> 3 partner I think up through Shen 5.<br/> 4 Q As to those partners, ConocoPhillips was<br/> 5 trying to sell its working interest in Shenandoah 2:38PM<br/> 6 since 2015; right?<br/> 7 A It's not clear to me whether they were<br/> 8 trying to sell their interest or whether or not they<br/> 9 were trying to just upgrade their portfolio. I<br/> 10 believe ConocoPhillips was looking at restructuring 2:38PM<br/> 11 their portfolio to have more capital to spend<br/> 12 online -- onshore.<br/> 13 Q You have no reason to dispute that<br/> 14 ConocoPhillips was trying to sell its working<br/> 15 interest in Shenandoah since 2015? 2:38PM<br/> 16 A Well, they were shopping it around. But I'm<br/> 17 not sure they were actually willing to sell it unless<br/> 18 they could get -- or the value that they wanted for<br/> 19 it.<br/> 20 Q Okay. But they were shopping it around 2:39PM<br/> 21 since 2015; right?<br/> 22 A They did go out to the market and ask what<br/> 23 people would be willing to pay.<br/> 24 Q Okay. Sound like semantics. But in any<br/> 25 event, okay. 2:39PM</p> <p style="text-align: right;">Page 102</p> | <p>1 Q I would like to turn your attention to the 2:40PM<br/> 2 last sentence in that paragraph.<br/> 3 "Given the remaining uncertainties and the<br/> 4 significant costs and time necessary to produce such<br/> 5 discoveries," you mean oil discoveries, "decisions 2:40PM<br/> 6 are continually made during the appraisal program to<br/> 7 either: Number 1, abandon the discovery as<br/> 8 noncommercial, Number 2, continue appraising to<br/> 9 further reduce uncertainty, or Number 3, move the<br/> 10 effort to the 'development' phase." 2:41PM<br/> 11 Is that right?<br/> 12 A Yes.<br/> 13 Q And so the company is constantly visiting<br/> 14 whether to abandon, continue or develop based on<br/> 15 economic considerations; correct? 2:41PM<br/> 16 A Based upon uncertainties during the<br/> 17 appraisal. The purpose of appraisal is to reduce the<br/> 18 uncertainty.<br/> 19 Q So the company's constantly revisiting<br/> 20 which direction to go in; right? 2:41PM<br/> 21 A The results of the last appraisal or the<br/> 22 past appraisal drives an estimate of what additional<br/> 23 appraisal needs to be done to reduce uncertainty. You<br/> 24 can't make a commercial assessment until you've<br/> 25 finished appraisal. 2:41PM</p> <p style="text-align: right;">Page 104</p>       |
| <p>1 So ConocoPhillips non-consented to Shen 7; 2:39PM<br/> 2 right?<br/> 3 A Yes.<br/> 4 Q Marathon did sell its working interest in<br/> 5 Shenandoah during the class period; correct? 2:39PM<br/> 6 A Yes.<br/> 7 Q And in the end, Anadarko abandoned<br/> 8 Shenandoah without making any money on Shenandoah;<br/> 9 right?<br/> 10 A Well, they exited, so -- but I don't know 2:39PM<br/> 11 about what the final economics -- there are some<br/> 12 complications financially in there.<br/> 13 So whether or not they actually made any<br/> 14 money, didn't make any money, you know, and where<br/> 15 that might actually have been made or not made, I 2:39PM<br/> 16 would find it doubtful, but I don't know for sure<br/> 17 because I'm not a financial person. I don't know<br/> 18 all the details of their backdoor arrangements.<br/> 19 Q So because you're not a financial person,<br/> 20 you don't have any opinion on that? 2:40PM<br/> 21 A I don't know whether or not they made money<br/> 22 or not.<br/> 23 Q Okay. All right. Let's turn to<br/> 24 Paragraph 97.<br/> 25 A Okay. 2:40PM</p> <p style="text-align: right;">Page 103</p>  | <p>1 Q So is your Paragraph 97 accurate or not? 2:41PM<br/> 2 A Yes.<br/> 3 Q Did you examine how the expected value of<br/> 4 Shenandoah fields changed over time?<br/> 5 A The way I would calculate expected value, I 2:42PM<br/> 6 did not do it after each one, no.<br/> 7 Q Did you examine how Anadarko's<br/> 8 management's view of Shenandoah changed over time?<br/> 9 A Well, exploration management's view was to<br/> 10 continue appraising and reducing uncertainty, which is 2:42PM<br/> 11 what they did.<br/> 12 Q I'm not talking about exploration, I'm<br/> 13 talking about Anadarko's senior management.<br/> 14 A Well, exploration's senior management was<br/> 15 driving what the decisions on exploration. 2:42PM<br/> 16 And even when exploration was done, they<br/> 17 drove the decisions on the development team. And<br/> 18 the decision was to continue to appraise.<br/> 19 Q So you're confining your answer to senior<br/> 20 exploration management; is that right? 2:43PM<br/> 21 A I believe the senior management above<br/> 22 exploration could have made a decision to not -- to<br/> 23 stop at any point in time, but they did not.<br/> 24 Q Let's turn to Paragraph 34.<br/> 25 You refer in this paragraph to Anadarko's 2:43PM</p> <p style="text-align: right;">Page 105</p> |

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| <p>1 public statements. 2:43PM</p> <p>2 A Okay.</p> <p>3 Q Now, are you offering an opinion in this</p> <p>4 case that defendants did not engage in a fraudulent</p> <p>5 scheme? 2:43PM</p> <p>6 MS. PHILLIPS: Objection to the extent it</p> <p>7 calls for a legal conclusion.</p> <p>8 THE WITNESS: Yes, the only thing I</p> <p>9 commented on is whether or not the facts that were</p> <p>10 relayed in the public statements that I reviewed, 2:44PM</p> <p>11 whether or not those facts were truthful or not.</p> <p>12 BY MS. JENSEN:</p> <p>13 Q So in answer to my question, the answer is</p> <p>14 no?</p> <p>15 MS. PHILLIPS: Same objection. 2:44PM</p> <p>16 THE WITNESS: The statements that they</p> <p>17 made were in my opinion truthful.</p> <p>18 BY MS. JENSEN:</p> <p>19 Q But that's not my question.</p> <p>20 A Okay. 2:44PM</p> <p>21 Q Just focus on my question.</p> <p>22 A Okay, repeat your question.</p> <p>23 Q Are you offering an opinion that</p> <p>24 defendants did not engage in a fraudulent scheme?</p> <p>25 MS. PHILLIPS: Same objection. 2:44PM</p> <p style="text-align: right;">Page 106</p>         | <p>1 defendants were misleading about in their 2:45PM</p> <p>2 statements?</p> <p>3 A Okay. Well, just a second. I thought I had</p> <p>4 a section. I wanted to find the exact wording. I</p> <p>5 know -- I don't know why I can't find it. 2:46PM</p> <p>6 Okay. So without looking up the exact</p> <p>7 wording, to the best of my memory, one of the issues</p> <p>8 was around when they made a public announcement</p> <p>9 about Shen 3, they had made the announcement that</p> <p>10 the well had found thicker sand and I think that was 2:47PM</p> <p>11 one of the complaints was they felt that that was</p> <p>12 not accurate.</p> <p>13 Q Any others?</p> <p>14 A I think after Shen 4, there was some</p> <p>15 complaint about the fact that Shen 4 had found 2:48PM</p> <p>16 600-plus feet of oil and then I -- those were probably</p> <p>17 the two that I recall off the top of my head.</p> <p>18 So somewhere in my report is a list of</p> <p>19 each of those and you probably know where they are</p> <p>20 better than I do. But I would have to look through 2:48PM</p> <p>21 it to find it offhand. I guess I could look at the</p> <p>22 table of contents.</p> <p>23 Q So the allegations that you evaluated,</p> <p>24 they are within the four corners of your report;</p> <p>25 correct? 2:49PM</p> <p style="text-align: right;">Page 108</p> |
| <p>1 THE WITNESS: I'm not offering such an 2:44PM</p> <p>2 opinion.</p> <p>3 BY MS. JENSEN:</p> <p>4 Q Are you offering an opinion that the</p> <p>5 defendants did not engage in any deceptive business 2:44PM</p> <p>6 practice?</p> <p>7 MS. PHILLIPS: Objection to the extent it</p> <p>8 calls for a legal conclusion.</p> <p>9 MS. JENSEN: That's an improper objection,</p> <p>10 by the way. Go ahead. 2:44PM</p> <p>11 THE WITNESS: I don't have any opinion as</p> <p>12 to whether or not that was true. I only have an</p> <p>13 opinion as to whether or not what they relayed to</p> <p>14 the public was factually correct.</p> <p>15 BY MS. JENSEN: 2:45PM</p> <p>16 Q And when -- the statements that you looked</p> <p>17 at, those are the ones that are set forth in your</p> <p>18 report; correct?</p> <p>19 A Yes.</p> <p>20 Q Now, what are the plaintiffs alleging was 2:45PM</p> <p>21 misleading about the defendant's statements?</p> <p>22 A You're asking me?</p> <p>23 Q Yes.</p> <p>24 A Could you repeat that again?</p> <p>25 Q What are the plaintiffs alleging 2:45PM</p> <p style="text-align: right;">Page 107</p> | <p>1 A Yes. 2:49PM</p> <p>2 Q Okay. You also say that the alleged</p> <p>3 omissions "are either commonly known uncertainties,</p> <p>4 such as the risk of faulting, or detailed technical</p> <p>5 disagreements that I would not expect to be 2:49PM</p> <p>6 disclosed."</p> <p>7 That's your position; correct?</p> <p>8 A One wouldn't normally, in talking about --</p> <p>9 Q I'm sorry to interrupt.</p> <p>10 A Go ahead. 2:49PM</p> <p>11 Q Is that a yes?</p> <p>12 A Say the question again.</p> <p>13 Q Okay. So I was quoting from your report,</p> <p>14 so --</p> <p>15 A Yes. 2:49PM</p> <p>16 Q You say that "The alleged omissions that</p> <p>17 Plaintiffs identify are either commonly known</p> <p>18 uncertainties, such as the risk of faulting, or</p> <p>19 detailed technical disagreements that I would not</p> <p>20 expect to be disclosed." 2:49PM</p> <p>21 That's your position; right?</p> <p>22 A Yes.</p> <p>23 Q Are there criteria for company disclosures</p> <p>24 under federal securities laws?</p> <p>25 A I'm not familiar -- I'm not aware of what 2:50PM</p> <p style="text-align: right;">Page 109</p>  |

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| <p>1 the requirements of what should be disclosed are or 2:50PM<br/>2 not.<br/>3 Q Okay. You're not a lawyer; right?<br/>4 A No.<br/>5 Q Okay. You don't hold yourself out as a 2:50PM<br/>6 securities law expert?<br/>7 A No.<br/>8 Q Now, you refer to commonly known<br/>9 uncertainties. What are you referring to?<br/>10 A In the oil and gas industry, there are 2:50PM<br/>11 certain terms which are interpreted in a common way.<br/>12 So that I would -- we refer to those as commonly<br/>13 known.<br/>14 Q Okay. So you're just referring to the<br/>15 fact that there's certain terms that are interpreted 2:50PM<br/>16 in a common way?<br/>17 A Yes.<br/>18 Q Okay. That's all you mean by that?<br/>19 A Yes.<br/>20 Q Okay. Are there any other commonly known 2:51PM<br/>21 uncertainties that you're referring to there?<br/>22 A Other than which ones?<br/>23 Q Well, you just referred to your definition<br/>24 of what that meant.<br/>25 A Right. So I said common -- they are 2:51PM<br/>Page 110</p>  | <p>1 uncertainties, you're talking about the phraseology 2:53PM<br/>2 around sand versus oil?<br/>3 A You asked for one example. I just gave it.<br/>4 Q So that's the type of example you're<br/>5 talking about when you say that the omissions are 2:53PM<br/>6 commonly known uncertainties?<br/>7 A Another omission might be that in the<br/>8 interpretation, there's the possibility of a -- say a<br/>9 fault nearby.<br/>10 Now, if you -- 2:53PM<br/>11 Q So if you --<br/>12 A If you don't know the fault's there, you<br/>13 wouldn't disclose, oh, by the way, there may be a<br/>14 fault nearby.<br/>15 Q Okay. So I think maybe we're 2:53PM<br/>16 misunderstanding the purpose of me taking your<br/>17 deposition.<br/>18 So I'm trying to understand what it is<br/>19 that you're referring to, but then you're using<br/>20 words like, well, it might be this. 2:54PM<br/>21 I'm trying to get to you tell me,<br/>22 Dr. Detomo, what are the commonly known<br/>23 uncertainties that you're referring to in<br/>24 Paragraph 34? Please give me an exhaustive list.<br/>25 A An exhaustive list? 2:54PM<br/>Page 112</p>  |
| <p>1 commonly -- they are understood in a common way and 2:51PM<br/>2 you asked if there were any others.<br/>3 Q Okay.<br/>4 A We did not talk about any specifically. So<br/>5 I don't know what the others are. 2:51PM<br/>6 Q Right. So you tell me. That's how you<br/>7 define that term, so I was just going off of your<br/>8 testimony. So what are you referring to here?<br/>9 A Are you asking me what are some common<br/>10 terms? 2:51PM<br/>11 Q I'm talking about your report, Dr. Detomo.<br/>12 So you used words, I'm trying to figure out what<br/>13 those words mean.<br/>14 You say, "commonly known uncertainties."<br/>15 What do you -- 2:52PM<br/>16 A Can you tell me where that paragraph is?<br/>17 Q I already did, but yes, it's Paragraph 34.<br/>18 A Okay. As an example, a commonly used term<br/>19 is when one refers to a well having penetrated sand or<br/>20 whether a well had penetrated oil. 2:52PM<br/>21 So the common understanding is if you say<br/>22 a well penetrated sand, then it's common<br/>23 understanding that it doesn't have oil in it.<br/>24 Otherwise you would say it penetrated oil.<br/>25 Q So you're referring to commonly known 2:53PM<br/>Page 111</p> | <p>1 Q An exhaustive list? 2:54PM<br/>2 A It would take some time for me to develop an<br/>3 exhaustive list. I list the ones in the other parts<br/>4 when I respond to the particular claims at the time.<br/>5 But an exhaustive list would require me 2:54PM<br/>6 taking time and thought to write such a list down.<br/>7 I gave two examples, so...<br/>8 Q So those are your two examples then in<br/>9 this case?<br/>10 A How many examples are you looking for? 2:54PM<br/>11 Q I'm looking for all of the examples that<br/>12 apply to this case.<br/>13 A Well, examples that apply to each of the<br/>14 disclosures that were given are listed with each of<br/>15 the disclosures, so I don't recall them all off the 2:55PM<br/>16 top of my head, but they are in the report.<br/>17 Q I would like to know each of the commonly<br/>18 known uncertainties that your report relates to in<br/>19 the context of this case.<br/>20 A Okay. You would, for instance -- you would 2:55PM<br/>21 not disclose if your well had a problem. You would<br/>22 not disclose if your well took a kick. You would not<br/>23 disclose if your logging tool got stuck and required<br/>24 fishing. You would not -- I mean, so there are<br/>25 literally -- 2:56PM<br/>Page 113</p> |



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| <p>1 Q Dr. Detomo, just one second. I still 2:56PM<br/>2 think you're not understanding the question.<br/>3 A I was giving you a list --<br/>4 MS. PHILLIPS: Rachel, please don't<br/>5 interrupt Dr. Detomo. He's still answering your 2:56PM<br/>6 question, if you could let him continue.<br/>7 MS. JENSEN: He's actually not answering<br/>8 my question.<br/>9 MS. PHILLIPS: Please let him continue.<br/>10 He's still answer your question, Rachel. 2:56PM<br/>11 MS. JENSEN: You can stop the speaking<br/>12 objections.<br/>13 Q Dr. Detomo, is that an allegation in this<br/>14 case?<br/>15 A I don't know. You asked for a list of 2:56PM<br/>16 things that you would not disclose.<br/>17 Q No, I did not, actually.<br/>18 What I asked was: When you say the<br/>19 alleged omissions that plaintiffs identify are<br/>20 either commonly known uncertainties, such as the 2:56PM<br/>21 risk of faulting, I'm going to stop there, okay.<br/>22 So I don't know if you looked at the<br/>23 complaint in this case. But are you saying that<br/>24 this case is about whether a logging tool got stuck?<br/>25 Is that what your understanding of this case is? 2:57PM<br/>Page 114</p> | <p>1 And so I'm responding to those. So I need 2:58PM<br/>2 to look at each of the plaintiff allegations in<br/>3 order to do that for you.<br/>4 Q Okay. I just wanted to make sure you<br/>5 appreciated the difference between the statement 2:58PM<br/>6 and --<br/>7 A Now I understand it.<br/>8 So I'm looking at the alleged misstatement<br/>9 after Shen 1 on 119. I'm just double checking each<br/>10 of them to make sure that we don't miss any. 2:59PM<br/>11 Q Sure.<br/>12 A Well, for some reason I don't quote the<br/>13 actual words that go with it. I just talked about the<br/>14 part of the complaint that said that.<br/>15 But for instance, in the complaint -- 3:01PM<br/>16 under part of the amended complaint there was a<br/>17 complaint that the Shenandoah well found<br/>18 approximately 15 percent -- 50 percent more of the<br/>19 same sand and confirmed down-dip thickening.<br/>20 I believe part of the complaint was they 3:01PM<br/>21 did not disclose they had omitted the fact that they<br/>22 had not found oil, so...<br/>23 Q Okay. Any other omission?<br/>24 A Yeah. That was Shen 3.<br/>25 So after Shen 4, the complaint alleged 3:02PM<br/>Page 116</p>   |
| <p>1 A No, I believe the last question you asked is 2:57PM<br/>2 can you give me an exhaustive list of things you<br/>3 wouldn't disclose and I was doing that.<br/>4 Q Actually, I said in the context of this<br/>5 case. I'm actually talking about the context of 2:57PM<br/>6 your statement here.<br/>7 A Right.<br/>8 Q So what I'm trying to ask you, Dr. Detomo,<br/>9 which is I think quite clear, is what are the<br/>10 alleged omissions in this case that you are 2:57PM<br/>11 referring to as commonly known uncertainties?<br/>12 A Okay. Let's go through and find each of the<br/>13 alleged statements and we can go through them one at a<br/>14 time.<br/>15 Q Okay. And just to be clear, Dr. Detomo, I 2:57PM<br/>16 don't want to go off on another frolic and detour.<br/>17 A Mm-hmm.<br/>18 Q I'm asking about you omissions, not<br/>19 statements.<br/>20 A Right. 2:58PM<br/>21 Q So do you have a list of omissions that<br/>22 are alleged somewhere in your report?<br/>23 A Some of the -- some of the plaintiffs'<br/>24 challenges are -- were around certain things being<br/>25 omitted. 2:58PM<br/>Page 115</p>  | <p>1 that Shen 4 confirmed massive salt deposits that 3:02PM<br/>2 would obstruct or prevent access to deposits. And<br/>3 so the complaint was is the fact that they had<br/>4 penetrated salt was omitted.<br/>5 Q Any other omission? 3:03PM<br/>6 A The reason that I said that you wouldn't<br/>7 normally disclose that is because every well<br/>8 penetrated salt.<br/>9 Q Any other omission?<br/>10 A I think part of the complaint after Shen 5 3:04PM<br/>11 was although the -- they had -- the Shen 5 well<br/>12 encountered more than 1,000 feet of net oil pay and<br/>13 expanded the eastern extent of the field, there was a<br/>14 complaint that they had not disclosed that they had<br/>15 encounter tar in the well. 3:04PM<br/>16 And they omitted that. So that was part<br/>17 of the complaint.<br/>18 I think those are the three most<br/>19 significant ones associated with those three wells.<br/>20 Q Are there any other omissions? 3:05PM<br/>21 A We already talked about the omission as to<br/>22 whether or not there were faults nearby.<br/>23 And so I think there was a complaint<br/>24 Shen 4 had not disclosed that they had penetrated a<br/>25 fault, but one would normally not disclose that 3:05PM<br/>Page 117</p> |

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| <p>1 especially since one doesn't know the a size or 3:05PM<br/> 2 orientation of the fault.<br/> 3 Q Any others?<br/> 4 A There may be others. I don't recall. Those<br/> 5 are the ones that I found quickly. For a more 3:05PM<br/> 6 exhaustive list, I would have to spend more time to do<br/> 7 more looking and research through.<br/> 8 Q Okay. I mean that's my question. I want<br/> 9 to know all the omissions that your report concerns.<br/> 10 So are those the omissions that your 3:05PM<br/> 11 report concerns?<br/> 12 A I think those are the major ones my report<br/> 13 concerns.<br/> 14 Q Are there any minor ones?<br/> 15 A Not that I recall off the top of my head and 3:05PM<br/> 16 not ones that would necessarily change, I think, my<br/> 17 opinion of that -- that these types of things are<br/> 18 typically not disclosed and are well understood.<br/> 19 Q So I just want to make sure. Have we<br/> 20 covered all the omissions that fall in that category 3:06PM<br/> 21 according to your report?<br/> 22 MS. PHILLIPS: Objection, asked and<br/> 23 answered.<br/> 24 THE WITNESS: To the best of my memory.<br/> 25</p> <p style="text-align: right;">Page 118</p> | <p>1 whether companies have a duty to correct statements 3:07PM<br/> 2 that later become inaccurate?<br/> 3 MS. PHILLIPS: Objection.<br/> 4 THE WITNESS: Is that a question for me?<br/> 5 BY MS. JENSEN: 3:07PM<br/> 6 Q Yes.<br/> 7 A Could you repeat it?<br/> 8 Q Do you have an opinion about whether<br/> 9 companies need to correct statements that later<br/> 10 become false or misleading? 3:07PM<br/> 11 MS. PHILLIPS: Objection.<br/> 12 THE WITNESS: I don't know what the<br/> 13 requirements are for whether or not they need to do<br/> 14 that.<br/> 15 BY MS. JENSEN: 3:08PM<br/> 16 Q Is there any -- do you have any opinion as<br/> 17 to whether companies have any duty to update<br/> 18 investors?<br/> 19 MS. PHILLIPS: Objection.<br/> 20 THE WITNESS: My only opinion is what they 3:08PM<br/> 21 tell them should be truthful.<br/> 22 BY MS. JENSEN:<br/> 23 Q Beyond that, you really have no idea what<br/> 24 the federal securities laws require; correct?<br/> 25 A Correct. 3:08PM</p> <p style="text-align: right;">Page 120</p>  |
| <p>1 BY MS. JENSEN: 3:06PM<br/> 2 Q Okay. So, Dr. Detomo, I'm entitled to<br/> 3 understand all of the bases for your report. So<br/> 4 certainly if it was a basis for your report, you<br/> 5 would have told me that right now? 3:06PM<br/> 6 A To the best of my memory, yes.<br/> 7 Q Okay. And if there was another omission<br/> 8 that you were concerned with, it would appear in<br/> 9 your report; correct?<br/> 10 A Yes. 3:06PM<br/> 11 Q Okay. So is it your opinion, then, that<br/> 12 if a risk is a commonly unknown uncertainty, then a<br/> 13 company has no duty to disclose it under the federal<br/> 14 securities laws?<br/> 15 MS. PHILLIPS: Objection. 3:07PM<br/> 16 THE WITNESS: I don't know what -- it's<br/> 17 not my area of expertise to say what is underneath<br/> 18 the federal securities law in terms of what's<br/> 19 disclosed and what's not.<br/> 20 BY MS. JENSEN: 3:07PM<br/> 21 Q Right. So you don't have any idea one way<br/> 22 or the other what's required to be disclosed<br/> 23 legally; right?<br/> 24 A True, correct.<br/> 25 Q Ergo, you also have no opinion as to 3:07PM<br/> Page 119</p>   | <p>1 Q All right. Now, there is another category 3:08PM<br/> 2 of omissions that you discuss in your report. And<br/> 3 that's that there's some detailed technical<br/> 4 disagreements that you would not expect to be<br/> 5 disclosed. 3:08PM<br/> 6 Now, again, you don't know what is<br/> 7 required to be disclosed; correct?<br/> 8 A Correct.<br/> 9 Q And the term "technical" -- technical by<br/> 10 that, it's often used as a term to downplay 3:08PM<br/> 11 something; right?<br/> 12 MS. PHILLIPS: Objection.<br/> 13 THE WITNESS: No, I don't understand that<br/> 14 statement.<br/> 15 BY MS. JENSEN: 3:08PM<br/> 16 Q Okay. So are you saying that the<br/> 17 whistleblower complaint to the SEC by the subsurface<br/> 18 lead on Anadarko was just a technical disagreement?<br/> 19 A I don't have an opinion as to what the<br/> 20 motivation of that disagreement was. 3:09PM<br/> 21 What I do know is that the disagreements<br/> 22 between different groups and different interpreters<br/> 23 are actually encouraged because it makes sure that<br/> 24 one explores all ranges of possibilities.<br/> 25 Q So you just don't know the nature of the 3:09PM<br/> Page 121</p> |



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| <p>1 SEC whistleblower complaint; correct? 3:09PM</p> <p>2 A I read it, but I don't have an opinion as to</p> <p>3 whether or not -- how it turned out or what the</p> <p>4 validity of it was.</p> <p>5 Q And allegations of fraud, do you consider 3:09PM</p> <p>6 allegations of fraud a technical disagreement?</p> <p>7 A If the allegations are allegations as to the</p> <p>8 technical veracity of what was there, I would consider</p> <p>9 it within my realm to comment on.</p> <p>10 But if it's a -- if it's an allegation 3:10PM</p> <p>11 about other things, whether it's -- well, if it's</p> <p>12 about non-technical items of which I consider myself</p> <p>13 an expert, then I couldn't comment on them.</p> <p>14 Q You are aware that the teams at the time</p> <p>15 used words such as "ethically questionable"; right? 3:10PM</p> <p>16 A I've seen that written in places, but again,</p> <p>17 I'm not here to judge the ethics or to evaluate the</p> <p>18 ethics of what's done or any of that. Just the facts</p> <p>19 that I had a chance to read through and understand.</p> <p>20 Q So ethical disagreements are beyond the 3:11PM</p> <p>21 purview of your report; correct?</p> <p>22 A Yes.</p> <p>23 Q Elsewhere in your report you say that</p> <p>24 nonconforming opinions needn't be disclosed; is that</p> <p>25 right? 3:11PM</p> <p style="text-align: right;">Page 122</p>                   | <p>1 correct? 3:12PM</p> <p>2 A Yes.</p> <p>3 Q And you say that Dr. Merrill's review of</p> <p>4 public perception is not supported; is that right?</p> <p>5 A I would have to see where it is, which 3:13PM</p> <p>6 perception you're talking about.</p> <p>7 Q That's fair. Okay. Let's just -- let's</p> <p>8 get a little more concrete.</p> <p>9 A Okay.</p> <p>10 Q Do you agree that financial analysts 3:13PM</p> <p>11 covering a company are part of public perception?</p> <p>12 A They are part of the public, yes.</p> <p>13 Q Now, you are familiar with the term "giant</p> <p>14 field"; right?</p> <p>15 A I'm familiar with the term's usage, yes. 3:13PM</p> <p>16 Q It means over 500 MMBOE net recoverable?</p> <p>17 A That's how some people have chosen to define</p> <p>18 it, that's not an industry accepted value.</p> <p>19 Q That's a generally understood term; right?</p> <p>20 A I wouldn't even say it was generally 3:14PM</p> <p>21 understood. There are certain people who have</p> <p>22 proposed that as a term.</p> <p>23 Q Certainly people in the industry use it</p> <p>24 that way; right?</p> <p>25 A Not always at 500, no. 3:14PM</p> <p style="text-align: right;">Page 124</p>  |
| <p>1 A To my knowledge, you would not disclose -- 3:11PM</p> <p>2 there's always nonconforming opinions, so yes.</p> <p>3 Q So are you saying that only -- if only,</p> <p>4 for example, hypothetical, only a minority of folks</p> <p>5 at Enron thought they were committing fraud, then 3:11PM</p> <p>6 that didn't need to be disclosed because it was a</p> <p>7 nonconforming opinion?</p> <p>8 A No, I think if the facts are -- if you have</p> <p>9 an opinion on the facts, then those facts should be</p> <p>10 made -- you know, discussed within the company. 3:12PM</p> <p>11 But it's very common for a company to take</p> <p>12 a broad range of opinions and to say, okay, which</p> <p>13 opinion are we going to -- technical opinion, when</p> <p>14 there is a lot of uncertainty, which opinion is it</p> <p>15 that we're going to go forward to? 3:12PM</p> <p>16 I'm not an expert on fraud, but I would</p> <p>17 expect fraud to not be -- it's either fraud or it's</p> <p>18 not. There's not an opinion about it.</p> <p>19 Q Okay. So, again, your report doesn't</p> <p>20 touch on allegations of fraud or ethical 3:12PM</p> <p>21 disagreements?</p> <p>22 A No, it does not.</p> <p>23 Q Now, in your report you criticize the</p> <p>24 plaintiffs' experts for not opining whether</p> <p>25 Anadarko's statements were misleading to investors; 3:12PM</p> <p style="text-align: right;">Page 123</p> | <p>1 Q And what is the different amount that 3:14PM</p> <p>2 you've heard?</p> <p>3 A It's often not defined by a specific number.</p> <p>4 And the other thing is that that number changes over</p> <p>5 time because that number is always in reference to 3:14PM</p> <p>6 what else is being found; right?</p> <p>7 So 20 years ago, you know, 500 meant one</p> <p>8 thing, today 500 means a different thing. So it's</p> <p>9 just a kind of a mark in the sand that one keeps</p> <p>10 moving around. 3:14PM</p> <p>11 Q Okay. That's your testimony, that it's</p> <p>12 not 500 MMBOE?</p> <p>13 A My testimony is that it's not universally</p> <p>14 accepted to be 500 MMBOE.</p> <p>15 Q And it is sometimes used that way; right? 3:15PM</p> <p>16 A It is sometimes used that way.</p> <p>17 Q Okay. Let me pull up an exhibit.</p> <p>18 MS. PHILLIPS: We've been going about an</p> <p>19 hour and I think we were supposed to break around</p> <p>20 3:00, but whenever works for you. 3:15PM</p> <p>21 MS. JENSEN: Okay. Give me a few minutes.</p> <p>22 I think we can do one quick exhibit and then we can</p> <p>23 take a break.</p> <p>24 Q Dr. Detomo, you produced in this action an</p> <p>25 Anadarko third quarter 2015 operations report that 3:15PM</p> <p style="text-align: right;">Page 125</p> |

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| <p>1 called Shenandoah a giant oil discovery; correct? 3:15PM</p> <p>2 A I may have. I don't recall exactly the</p> <p>3 document you're talking about. But I'm sure you'll</p> <p>4 share it with me, yes, or you can tell me what page if</p> <p>5 it's in my report. 3:16PM</p> <p>6 Q Sure. I'm actually going to show you</p> <p>7 something different. I think that's the -- I think</p> <p>8 the record speaks for itself there.</p> <p>9 MS. JENSEN: You should be able to see</p> <p>10 what's been marked as Exhibit 530. 3:16PM</p> <p>11 (Whereupon, Exhibit 530 was marked for</p> <p>12 identification.)</p> <p>13 MS. JENSEN: For the record, this is</p> <p>14 BOFAS_APC-000259.</p> <p>15 THE WITNESS: Okay. I have it open. 3:16PM</p> <p>16 BY MS. JENSEN:</p> <p>17 Q Do you recognize this document?</p> <p>18 A No, I don't believe I've seen it before.</p> <p>19 Q Okay. Have you heard of Bank of America</p> <p>20 Merrill Lynch? 3:16PM</p> <p>21 A Yes.</p> <p>22 Q Reputable firm; right?</p> <p>23 A Yes.</p> <p>24 Q And did you see -- I know the type might</p> <p>25 be a little small, but this is -- I'll state for the 3:17PM</p> <p style="text-align: right;">Page 126</p> | <p>1 Q And do you see here in this paragraph, 3:18PM</p> <p>2 this first paragraph under "Shenandoah: 5500MM to</p> <p>3 1 billion BOE potential," do you see that it says</p> <p>4 the management -- this is about midway through that</p> <p>5 paragraph. 3:18PM</p> <p>6 A Yes.</p> <p>7 Q The "management has taken the rare step of</p> <p>8 describing Shenandoah as a potential giant, meaning</p> <p>9 possibly more than 500 mm bbls."</p> <p>10 Do you see that? 3:18PM</p> <p>11 A Yes.</p> <p>12 Q Okay. Based on this document, it appears</p> <p>13 that Bank of America Merrill Lynch heard the word</p> <p>14 "giant" and perceived it meant over 500 million</p> <p>15 barrels; correct? 3:19PM</p> <p>16 A Yes, it says -- it hedges, it says describes</p> <p>17 Shenandoah as a potential giant, meaning possibly more</p> <p>18 than 500 million barrels. So it does hedge on it.</p> <p>19 But yes, they are saying it might be in</p> <p>20 that ballpark. 3:19PM</p> <p>21 Q Okay. And you're aware that in other</p> <p>22 Anadarko public statements, they didn't say just</p> <p>23 potential, they actually referred to Shenandoah as a</p> <p>24 giant oil discovery; correct?</p> <p>25 A No, I don't remember -- I don't remember the 3:19PM</p> <p style="text-align: right;">Page 128</p> |
| <p>1 record is appears to be a report from Bank of 3:17PM</p> <p>2 America Merrill Lynch dated March 19th, 2013 and</p> <p>3 the -- it's a company update buy and the headline is</p> <p>4 "Shenandoah: Major discovery confirmed valued at \$4</p> <p>5 a share." 3:17PM</p> <p>6 I'm going to direct your attention to the</p> <p>7 first paragraph here.</p> <p>8 A Okay.</p> <p>9 Q It begins by discussing a Shenandoah well.</p> <p>10 Do you see that? 3:17PM</p> <p>11 A Yes.</p> <p>12 Q You understand this to be Shenandoah 2?</p> <p>13 A Yes.</p> <p>14 Q And Bank of America is valuing Shen at \$4</p> <p>15 a share here? 3:17PM</p> <p>16 A That's what it says.</p> <p>17 Q Now, the report concerns the Shenandoah</p> <p>18 field; right?</p> <p>19 A I'm assuming that it means the Shenandoah</p> <p>20 field. It isn't specific, but since they are talking 3:18PM</p> <p>21 about a particular well, I would assume it to be that</p> <p>22 field.</p> <p>23 Q In other words, it's not the whole basin,</p> <p>24 it's this field?</p> <p>25 A Correct. 3:18PM</p> <p style="text-align: right;">Page 127</p>  | <p>1 documents that I looked at them using the word 3:19PM</p> <p>2 "giant."</p> <p>3 Q I'll represent to you that you produced</p> <p>4 the document in which it did.</p> <p>5 A Okay. 3:19PM</p> <p>6 Q So if such a reputable organization as</p> <p>7 Bank of America Merrill Lynch agree Shenandoah is</p> <p>8 potentially a giant field, that would be reasonable</p> <p>9 to assume that at least some of the public perceived</p> <p>10 it that way? 3:19PM</p> <p>11 A Well, that -- yes, some of the public maybe</p> <p>12 perceived it that way, but it says potential and as</p> <p>13 long as a field is being appraised, it's just</p> <p>14 potential.</p> <p>15 Q Okay. And again, you don't have any 3:20PM</p> <p>16 reason to dispute that you produced the document</p> <p>17 from Anadarko that used the word "giant" without</p> <p>18 "potential" in front of it?</p> <p>19 A You haven't shown me such a document. I</p> <p>20 don't recall, but I don't dispute that I may have. 3:20PM</p> <p>21 MS. JENSEN: Let's go ahead and take a</p> <p>22 quick break.</p> <p>23 THE WITNESS: Time to come back?</p> <p>24 MS. JENSEN: Let's go off the record.</p> <p>25 THE VIDEOGRAPHER: Off the record, it's 3:20PM</p> <p style="text-align: right;">Page 129</p>                                  |

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| <p>1 3:20 p.m. 3:20PM</p> <p>2 (Recess taken.)</p> <p>3 THE VIDEOGRAPHER: Back on the record.</p> <p>4 It's 4:00 p.m.</p> <p>5 BY MS. JENSEN: 4:00PM</p> <p>6 Q Welcome back, Dr. Detomo.</p> <p>7 A Thank you.</p> <p>8 Q In your report you reference the company</p> <p>9 called Navitas. Do you recall that?</p> <p>10 A Yes. 4:00PM</p> <p>11 Q And you agree that Navitas only got</p> <p>12 involved with Shenandoah after the class period?</p> <p>13 A Yes.</p> <p>14 Q Navitas isn't the current operator or the</p> <p>15 operator at this time; correct? 4:01PM</p> <p>16 A That's correct.</p> <p>17 Q Beacon is?</p> <p>18 A Beacon is the current operator.</p> <p>19 Q So in preparing your report, you reviewed</p> <p>20 Navitas's annual report? 4:01PM</p> <p>21 A I reviewed I believe Navitas's annual report</p> <p>22 and Beacon's.</p> <p>23 Q And you also reviewed Navitas's</p> <p>24 presentation to investors?</p> <p>25 A Yes, I reviewed of number of their 4:01PM</p> <p style="text-align: right;">Page 130</p>   | <p>1 A I have no idea what the requirements are. 4:02PM</p> <p>2 Q You don't know what the requirements are</p> <p>3 here and you don't know the requirements there;</p> <p>4 right?</p> <p>5 A Correct. 4:02PM</p> <p>6 Q And with Beacon, same there, you haven't</p> <p>7 reviewed any of its internal documents; correct?</p> <p>8 A No.</p> <p>9 Q As we're sitting here today, the field has</p> <p>10 not yet been developed; is that correct? 4:02PM</p> <p>11 A I was under the impression that it's being</p> <p>12 developed as we speak, so they may have actually</p> <p>13 drilled some wells by now. They were going to</p> <p>14 predrill the wells.</p> <p>15 Q Let's put it this way, not one drop of oil 4:03PM</p> <p>16 has been sold from Shenandoah as of this time;</p> <p>17 correct?</p> <p>18 A They are not producing yet.</p> <p>19 Q And won't be for a year or longer;</p> <p>20 correct? 4:03PM</p> <p>21 A I believe it's 2024 is their projection.</p> <p>22 Q And so it's not commercially successful at</p> <p>23 this time?</p> <p>24 A Correct.</p> <p>25 Q Let's turn to Paragraph 66 of your report. 4:03PM</p> <p style="text-align: right;">Page 132</p> |
| <p>1 documents. I think so, but I would have for look at 4:01PM</p> <p>2 the document to be sure.</p> <p>3 Q You agree that these are public-facing</p> <p>4 documents; correct?</p> <p>5 A Yes. 4:01PM</p> <p>6 Q Generally designed to attract investments;</p> <p>7 right?</p> <p>8 A Yes.</p> <p>9 Q And you did not review any of the internal</p> <p>10 documents from Navitas showing its technical work; 4:01PM</p> <p>11 right?</p> <p>12 A I only reviewed the government and publicly</p> <p>13 available documents.</p> <p>14 Q So no internal documents from Navitas?</p> <p>15 A No. 4:02PM</p> <p>16 Q And Navitas is not traded on the New York</p> <p>17 Stock Exchange?</p> <p>18 A No, not that I am not aware of.</p> <p>19 Q Not a U.S. company; right?</p> <p>20 A I think it's mostly an investment group. 4:02PM</p> <p>21 Q It's an Israeli company; right?</p> <p>22 A Yes.</p> <p>23 Q You're aware that Israeli companies have</p> <p>24 less strict disclosure requirements than U.S.</p> <p>25 companies? 4:02PM</p> <p style="text-align: right;">Page 131</p> | <p>1 A Okay. 4:03PM</p> <p>2 Q You got there faster than me. Hold on one</p> <p>3 second.</p> <p>4 So in this paragraph you say you have not</p> <p>5 seen any evidence that the appraisal team or 4:04PM</p> <p>6 management at Anadarko concluded that the prospect</p> <p>7 was not commercially viable. Do you see that?</p> <p>8 A Yes.</p> <p>9 Q Now, Dr. Detomo, you've heard the phrase</p> <p>10 "hear no evil, see no evil"; right? 4:04PM</p> <p>11 A Yes.</p> <p>12 Q Now, did you read Mr. Pittinger's report</p> <p>13 in preparing your own?</p> <p>14 A Yes.</p> <p>15 Q And in fact, Mr. Pittinger cited a number 4:04PM</p> <p>16 of documents that indicated, among others, that the</p> <p>17 base case NAV for Shenandoah at the time was zero.</p> <p>18 Do you recall that?</p> <p>19 A I recall that -- some calculations that</p> <p>20 indicated that that's what he was saying, yes. 4:04PM</p> <p>21 Q Well, I mean, that's what the internal</p> <p>22 documents reflected; right?</p> <p>23 A Yes, but they were under certain</p> <p>24 circumstances, along with a number of other</p> <p>25 calculations. 4:04PM</p> <p style="text-align: right;">Page 133</p>  |

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| <p>1 Q But you don't deny that there was internal 4:04PM</p> <p>2 documents that were reflected in Mr. Pittinger's</p> <p>3 report that showed the base case NAV to be zero for</p> <p>4 Shenandoah?</p> <p>5 A At one time, yes. 4:05PM</p> <p>6 Q Let's turn to Paragraph 208.</p> <p>7 A Yes.</p> <p>8 Q Okay. So you dispute Pittinger's report</p> <p>9 as to the PIR10 and you say, "There is no support</p> <p>10 for the contention that a project must reach a 4:06PM</p> <p>11 certain 'threshold' to continue appraisal." Is that</p> <p>12 right?</p> <p>13 A That's correct.</p> <p>14 Q You discuss PIR in your report; correct?</p> <p>15 A Yes. 4:06PM</p> <p>16 Q I think you defined it earlier, it</p> <p>17 measures profits and investment ratio?</p> <p>18 A Yes.</p> <p>19 Q How do you calculate PIR?</p> <p>20 A You calculate PIR by calculating the profit 4:06PM</p> <p>21 of the field at the end of the field's life and after</p> <p>22 it's been abandoned and discount it at a certain</p> <p>23 factor and divide by the cost and expenditures of the</p> <p>24 field under the same factor.</p> <p>25 So you just divide the same two numbers 4:06PM</p> <p style="text-align: right;">Page 134</p> | <p>1 Q Okay. So let's look to Page 20 or 4:09PM</p> <p>2 slide 20.</p> <p>3 Okay. You've seen this chart before?</p> <p>4 A Yes.</p> <p>5 Q And do you recognize this as being an MMRA 4:09PM</p> <p>6 analysis?</p> <p>7 A Yes.</p> <p>8 Q And can you explain how the MMRA tool was</p> <p>9 used to describe the resource distribution used --</p> <p>10 there's the decision tree, actually, so let's go 4:09PM</p> <p>11 down to the next one.</p> <p>12 How the MMRA tool was used to describe the</p> <p>13 resource distribution in the decision tree on</p> <p>14 slide 21?</p> <p>15 A Yes. So the MMRA was used to define what 4:10PM</p> <p>16 the success case would look like and the success case</p> <p>17 here being defined as Shen -- you know, the two --</p> <p>18 that the next wells would define success.</p> <p>19 The fail case which, is that the -- that</p> <p>20 you would fail in the development of it, and then 4:10PM</p> <p>21 the fail early case was that you would exit it</p> <p>22 without developing.</p> <p>23 So they had these three cases. The MMRA</p> <p>24 only defined the risk in the volumes -- or the risk</p> <p>25 for -- and the volumes potentially for these cases. 4:11PM</p> <p style="text-align: right;">Page 136</p>   |
| <p>1 and it gives you a ratio. The ratio is usually 4:06PM</p> <p>2 greater than 1, but a lot of people quote it with 1</p> <p>3 subtracted off, so .3 is .4. If you actually</p> <p>4 calculate the ratio, it would be 1.3 or 1.4.</p> <p>5 Q So in Paragraph 79 of your report, you 4:07PM</p> <p>6 refer to PIR values and you say that what Pittinger</p> <p>7 quotes is for the mean or P50 cases; is that right?</p> <p>8 A Yes.</p> <p>9 Q So if you'll bear with me for a moment,</p> <p>10 we'll mark an exhibit. 4:07PM</p> <p>11 Dr. Detomo, you should be able to see what</p> <p>12 has been marked for identification Exhibit 531.</p> <p>13 (Whereupon, Exhibit 531 was marked for</p> <p>14 identification.)</p> <p>15 MS. JENSEN: This is a document that bears 4:08PM</p> <p>16 the Bates stamp APC-000277887.</p> <p>17 THE WITNESS: Yes.</p> <p>18 BY MS. JENSEN:</p> <p>19 Q Do you recognize this document?</p> <p>20 A Just a second, I'm looking. 4:08PM</p> <p>21 Yes.</p> <p>22 Q And you understand this to be a PowerPoint</p> <p>23 presentation on development full field economics for</p> <p>24 Shenandoah?</p> <p>25 A Yes. 4:09PM</p> <p style="text-align: right;">Page 135</p>                     | <p>1 The decision tree is a pretty standard kind of 4:11PM</p> <p>2 analysis one uses to try to decide under what</p> <p>3 circumstances one would -- what action would one</p> <p>4 take in the future.</p> <p>5 Q Can you describe how the geologic 4:11PM</p> <p>6 distribution is truncated above the commercial</p> <p>7 minimum field size and above the economic minimum</p> <p>8 field size?</p> <p>9 A Are you referring to a particular slide or</p> <p>10 are you just asking a general question? 4:11PM</p> <p>11 Q Generally in the decision tree?</p> <p>12 A Well, generally you truncate the volume</p> <p>13 because if the volume is below a certain threshold, it</p> <p>14 does not really enter the distribution as to -- does</p> <p>15 not enter the distribution as being anything effective 4:12PM</p> <p>16 that you could do with.</p> <p>17 It usually falls in there. It usually</p> <p>18 deals with the low side case -- in fact, it always</p> <p>19 deals with the low side case.</p> <p>20 But in this case, again, you're back to 4:12PM</p> <p>21 the risk and the volumes and of the economics are</p> <p>22 separate from all this, right.</p> <p>23 So -- but anyway, so that's what it -- it</p> <p>24 cuts off the lowest edge of it saying that that's</p> <p>25 not even an effective volume that you would pursue. 4:12PM</p> <p style="text-align: right;">Page 137</p> |

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| <p>1 Q What are the branches that are shown in 4:12PM</p> <p>2 this tree and what's the basis for each of the</p> <p>3 probabilities in this decision tree?</p> <p>4 A Well, so you follow the decision tree from</p> <p>5 today and you say, if there's success -- there is a 4:12PM</p> <p>6 37.4 percent chance of success. Okay?</p> <p>7 And then you would follow that over and if</p> <p>8 you had success, then -- and this was based upon a</p> <p>9 certain model, a certain set of assumptions. Like</p> <p>10 one of the assumptions is that there was 100 million 4:13PM</p> <p>11 barrel production spar.</p> <p>12 I believe this assumption also assumed wet</p> <p>13 trees, in other words, trees located on the seafloor</p> <p>14 which have different implications for cost and</p> <p>15 whatnot. 4:13PM</p> <p>16 Given those things, if you had success,</p> <p>17 then they looked at the P10, P50 and P90 volumes,</p> <p>18 which you can see this is a symmetric distribution</p> <p>19 because the way MMRA works, they are always</p> <p>20 symmetric distributions. That's why P90 always has 4:13PM</p> <p>21 the same percent chance as P10.</p> <p>22 But anyways, for each of those, then they</p> <p>23 talked about what would be the expenditure and so --</p> <p>24 and the expenditure about what you would do in</p> <p>25 Phase 2. Because if you had a success -- this is 4:14PM</p> <p style="text-align: right;">Page 138</p> | <p>1 presentation more in detail. 4:15PM</p> <p>2 Q Is it your contention that Anadarko did</p> <p>3 not calculate expected value based on running</p> <p>4 economics on multiple scenarios?</p> <p>5 A They ran it on -- in this case on 100 MPOD 4:15PM</p> <p>6 spar, which if you had the P10 full field, you would</p> <p>7 not build 100 MPOD spar; right?</p> <p>8 So in that case, no. They've assumed one</p> <p>9 development for the -- for all of the possible</p> <p>10 cases. 4:16PM</p> <p>11 So I would say that this is not a</p> <p>12 realistic expectation as to what the cost would be</p> <p>13 for each of those possibilities.</p> <p>14 Q And have you done your own calculations as</p> <p>15 to what would be reasonable? 4:16PM</p> <p>16 A No, I have not. But I would expect the</p> <p>17 decision tree to look different.</p> <p>18 Q Okay. Because, I mean -- because you have</p> <p>19 experience with Shell, right, and they did things</p> <p>20 differently? 4:16PM</p> <p>21 A Well, but every company does decision trees,</p> <p>22 so the decision tree is pretty standard.</p> <p>23 Q Okay. How does knowing a PIR10 help a</p> <p>24 company make decisions?</p> <p>25 A Not every company uses PIR10, so -- but one 4:16PM</p> <p style="text-align: right;">Page 140</p>  |
| <p>1 talking about a two-phase one. 4:14PM</p> <p>2 Phase 1, you would go ahead and put some</p> <p>3 development out there and then the chance of</p> <p>4 Phase 2, P50 chance of Phase 2 and then P10 was</p> <p>5 obviously if it's a huge field, then you would 4:14PM</p> <p>6 probably drill extra wells and stuff. So that's why</p> <p>7 the gross capex goes up.</p> <p>8 Q So does it show -- does this decision tree</p> <p>9 show the costs for each of the five scenarios?</p> <p>10 A I believe it only shows the cost of the 4:14PM</p> <p>11 wells here and it takes into account using a spar of a</p> <p>12 certain size which has certain costs associated with</p> <p>13 it.</p> <p>14 But again, this represents one model for a</p> <p>15 potential development, so... 4:14PM</p> <p>16 Q And is it your contention that Anadarko</p> <p>17 did not calculate an NPV10 for each of these five</p> <p>18 branches or for each of the branches?</p> <p>19 A They did not calculate -- they calculated in</p> <p>20 order to -- you know, I'm not sure if they actually 4:15PM</p> <p>21 calculated NPV or not, so -- because if they</p> <p>22 calculated NPV, then there would be a total estimated</p> <p>23 NPV for the whole three legs together.</p> <p>24 So I don't recall seeing that, so I don't</p> <p>25 know for sure. I would have to look through the 4:15PM</p> <p style="text-align: right;">Page 139</p>                              | <p>1 way to -- one factor that one takes into account is 4:16PM</p> <p>2 to -- assuming a 10 percent inflation rate, would the</p> <p>3 project make enough profit to compete in your general</p> <p>4 portfolio and would it at least make enough profit to</p> <p>5 exceed the cost of capital. 4:17PM</p> <p>6 So one usually assumes the cost of capital</p> <p>7 is something like, you know, what you could make in</p> <p>8 other investments, say 5 to 10 percent. So you</p> <p>9 would not usually do anything lower than that,</p> <p>10 although there have been exceptions. 4:17PM</p> <p>11 And then you would use a PIR10 at that</p> <p>12 ratio in order to -- as one of the criteria in order</p> <p>13 to decide which opportunities you're willing to put</p> <p>14 your investments into.</p> <p>15 But I will say there's other things that 4:17PM</p> <p>16 come in. Some investments take 20 years to recover</p> <p>17 your investment, some investments take one year.</p> <p>18 So you typically balance a portfolio with</p> <p>19 a range of things so that you are insulated against</p> <p>20 things like market fluctuations. 4:18PM</p> <p>21 Q And when you're talking about companies,</p> <p>22 again, you never worked at Anadarko; correct?</p> <p>23 A No, but I worked with a number of partners</p> <p>24 all of which calculate PIRs.</p> <p>25 Q But you've never worked at Anadarko; 4:18PM</p> <p style="text-align: right;">Page 141</p> |

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| <p>1 correct? 4:18PM</p> <p>2 A Correct.</p> <p>3 Q Now, no doubt you saw internal documents</p> <p>4 with a formula for projects needing to be equal to</p> <p>5 or greater than .3 PIR? 4:18PM</p> <p>6 A I saw documents that said that PIR.3 was a</p> <p>7 threshold. But I also saw documentation specifically</p> <p>8 from Chris Camden that said it was just one of the</p> <p>9 criteria they would consider.</p> <p>10 Q And the threshold was something that 4:18PM</p> <p>11 Darrell Hollek testified about; correct?</p> <p>12 A Darrell Hollek testified that it was --</p> <p>13 well, he testified to a number of things, but one of</p> <p>14 the things he testified to was that they saw it as a</p> <p>15 kinds of threshold, I believe he said. 4:19PM</p> <p>16 Q Now, who is more senior, Darrell Hollek or</p> <p>17 Chris Camden?</p> <p>18 A Darrell Hollek is more senior, but I doubt</p> <p>19 Darrell calculates PIRs.</p> <p>20 Q Who would have been more likely to be part 4:19PM</p> <p>21 of the portfolio management discussions and</p> <p>22 decisions?</p> <p>23 A Probably at a very high level, the portfolio</p> <p>24 is usually a global portfolio that you're managing.</p> <p>25 So yes, I would say at the most senior level, they 4:19PM</p> <p style="text-align: right;">Page 142</p> | <p>1 when people are talking about asset trades or asset 4:21PM</p> <p>2 swaps.</p> <p>3 Q Okay. So you're not familiar working --</p> <p>4 you're not versant in working with NAV as a -- as a</p> <p>5 metric in the oil and gas industry? 4:21PM</p> <p>6 A No. Usually that -- that metric would</p> <p>7 usually be calculated by financial people who were</p> <p>8 trying to either swap or use the asset as leverage</p> <p>9 somewhere else.</p> <p>10 So in exploration and development, it's 4:21PM</p> <p>11 not a common metric that people would deal with.</p> <p>12 And I've never actually calculated net asset value.</p> <p>13 Q So then you don't know whether when a</p> <p>14 project is run at a certain oil price point that</p> <p>15 yields zero, that means it has a zero NAV? 4:22PM</p> <p>16 A So you can run -- you do the same thing when</p> <p>17 you calculate a PIR, you run it at a certain price</p> <p>18 point.</p> <p>19 So the price point -- in fact, most</p> <p>20 companies -- I shouldn't say most companies. At 4:22PM</p> <p>21 least the companies I'm familiar with run it at a</p> <p>22 series of price points. So they don't run it at one</p> <p>23 price point because predicting the price of oil is</p> <p>24 pretty darn near impossible.</p> <p>25 So I'm sure it is calculated at a certain 4:22PM</p> <p style="text-align: right;">Page 144</p> |
| <p>1 discuss the portfolio. 4:19PM</p> <p>2 Q And Darrell Hollek was at the top senior</p> <p>3 level; correct?</p> <p>4 A Yes, he was a senior.</p> <p>5 Q Okay. How is NAV defined in the oil and 4:20PM</p> <p>6 gas industry?</p> <p>7 A Where are you talking about?</p> <p>8 Q Oh, so yes. Step back. Switch topics.</p> <p>9 A Okay.</p> <p>10 Q How is NAV defined in the oil and gas 4:20PM</p> <p>11 industry?</p> <p>12 A NAV, that abbreviation covers a number of</p> <p>13 things. Could you put it in context for me?</p> <p>14 Q Have you ever heard of the term "net asset</p> <p>15 value"? 4:20PM</p> <p>16 A Yes, usually I use a slightly different</p> <p>17 abbreviation for it instead of asset, but okay. Yeah,</p> <p>18 net asset value. I usually see it as net opportunity</p> <p>19 value, okay. Asset value.</p> <p>20 Q Back to the question, how is it defined? 4:20PM</p> <p>21 A Net asset value is usually an estimation of</p> <p>22 what an asset is worth. But there are some</p> <p>23 complicated and interesting ways that that is</p> <p>24 calculated. So I'm used to seeing it. I'm used to --</p> <p>25 the most common place I think I've seen it used is 4:21PM</p> <p style="text-align: right;">Page 143</p>   | <p>1 price point, but I'm sure that that -- the reason 4:22PM</p> <p>2 it's usually used in asset swaps and things like</p> <p>3 that is because those are very short-term things and</p> <p>4 the price of oil is well known.</p> <p>5 Where when you're talking about 4:22PM</p> <p>6 developments, the price of oil ten or 15 years from</p> <p>7 now is not very well known. So they use different</p> <p>8 kind of numbers.</p> <p>9 MS. JENSEN: Okay. I've now marked an</p> <p>10 exhibit which is Exhibit 532 a document that bears 4:23PM</p> <p>11 Bates stamp APC-00784657. You should be able to see</p> <p>12 this in your Exhibit Share.</p> <p>13 (Whereupon, Exhibit 532 was marked for</p> <p>14 identification.)</p> <p>15 THE WITNESS: Yes. Meeting of the board 4:23PM</p> <p>16 of directors.</p> <p>17 BY MS. JENSEN:</p> <p>18 Q Okay. Do you recognize this document?</p> <p>19 A Let me take a look. Some of the slides look</p> <p>20 familiar, but I'm not actually sure I've seen this 4:24PM</p> <p>21 particular document.</p> <p>22 I've at least seen a couple of slides, but</p> <p>23 I don't know if I've seen this document or not.</p> <p>24 Q Okay. Let's turn to --</p> <p>25 A I don't remember the midstream stuff in 4:24PM</p> <p style="text-align: right;">Page 145</p>   |



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| <p>1 here. So that's why I don't think I've actually seen 4:24PM</p> <p>2 this particular document.</p> <p>3 Q All right. In your report at</p> <p>4 Footnote 822 --</p> <p>5 A 822 you said? 4:24PM</p> <p>6 Q Yes, this is at the end of Paragraph 912.</p> <p>7 A I see the reference.</p> <p>8 Q You see also that's the same document --</p> <p>9 or at least according to the Bates number, the same</p> <p>10 document as what we've got up on the screen? 4:25PM</p> <p>11 A Right. I think that's the one I reference</p> <p>12 slide 6 through 9.</p> <p>13 Q Okay. You actually cite slides 91 and 92;</p> <p>14 right?</p> <p>15 A What was the footnote again? 4:25PM</p> <p>16 Q Footnote 822.</p> <p>17 A I'm in the wrong place. Sorry about that.</p> <p>18 Graph or footnote 822?</p> <p>19 Q Footnote 822.</p> <p>20 A What page was it referenced on, do you 4:26PM</p> <p>21 recall?</p> <p>22 Q Page 420.</p> <p>23 A 420, that's where I'm going wrong.</p> <p>24 Yes, slides 91 through 92 and 105, okay.</p> <p>25 Q So you reference this as saying that 4:27PM</p> <p style="text-align: right;">Page 146</p>   | <p>1 A Yes. 4:29PM</p> <p>2 Q The price deck here is \$60; right?</p> <p>3 A Yes.</p> <p>4 Q That's the base case; right?</p> <p>5 A That's the case calculations are going to be 4:29PM</p> <p>6 done in, yes.</p> <p>7 Q So Anadarko ran its economics for</p> <p>8 Shenandoah throughout the class period at 50 or \$60</p> <p>9 a barrel; right?</p> <p>10 A I think there were other numbers at certain 4:29PM</p> <p>11 times, but I'm not sure which ones were in the class</p> <p>12 period and which ones were out, but okay.</p> <p>13 Q We're seeing -- or here this depicts</p> <p>14 bubbles. Do you see -- or circles, whatever you</p> <p>15 want to call them? 4:29PM</p> <p>16 A Yes.</p> <p>17 Q They are drawn relative to their asset</p> <p>18 size by net asset value in billions; correct?</p> <p>19 A Yes.</p> <p>20 Q The Y-axis, there is a rate of return on 4:29PM</p> <p>21 investment, the ROR?</p> <p>22 A Yes.</p> <p>23 Q And that's a capital efficiency measure;</p> <p>24 right?</p> <p>25 A Yes. 4:30PM</p> <p style="text-align: right;">Page 148</p>   |
| <p>1 Shenandoah is shown has providing long-term growth 4:27PM</p> <p>2 and having value; right?</p> <p>3 A Let me get to the slide. It takes awhile to</p> <p>4 refresh.</p> <p>5 Yes, I see where I say that in 4:27PM</p> <p>6 Paragraph 912.</p> <p>7 Q Okay. I would like you to take a look at</p> <p>8 slide 90 in this document. So sorry, I'm talking</p> <p>9 about Exhibit 532.</p> <p>10 A Where it says, "Major Asset Overviews"? 4:28PM</p> <p>11 Q Exactly. Okay. That's Page 90 on the PDF</p> <p>12 or 89 -- yes, sorry. I'm looking for the number on</p> <p>13 the slide itself, it's the lower right-hand side and</p> <p>14 also for identification you can look at the Bates</p> <p>15 number, which is APC-00784747. 4:28PM</p> <p>16 Do you see that page?</p> <p>17 A No, because I don't get any APC numbers on</p> <p>18 the individual slides.</p> <p>19 Q You saw "Major Asset Overviews;" correct?</p> <p>20 A Yes. 4:29PM</p> <p>21 Q So just scroll down one more.</p> <p>22 A Okay. "Opportunity Set"?</p> <p>23 Q Yes. "Opportunity Set: Materiality and</p> <p>24 Investment Returns."</p> <p>25 Do you see that? 4:29PM</p> <p style="text-align: right;">Page 147</p> | <p>1 Q On the X-axis, it's the remaining 4:30PM</p> <p>2 resource MMBOE?</p> <p>3 A Yes.</p> <p>4 Q And again, the prospects on this graph are</p> <p>5 depicted in circles. I want to draw your attention 4:30PM</p> <p>6 to Shenandoah, which is at the far left bottom of</p> <p>7 the screen.</p> <p>8 Do you see that?</p> <p>9 A Yes.</p> <p>10 Q It is the smallest bubble on the graph; 4:30PM</p> <p>11 right?</p> <p>12 A I'm trying to resolve because there's an</p> <p>13 arrow -- it looks like an arrow aiming up.</p> <p>14 Q There's Paon; right?</p> <p>15 A There's Paon, but then there is a line drawn 4:31PM</p> <p>16 from Shenandoah up towards where Paon is. I can't</p> <p>17 tell what that is.</p> <p>18 Q Right. It's like a speck; right?</p> <p>19 A No, because I -- well, I can't tell. All I</p> <p>20 know is -- 4:31PM</p> <p>21 Q You can't see it. Let's put it that way.</p> <p>22 It's the only project on the graph that</p> <p>23 has a net value lower than .5 billion; right?</p> <p>24 A Lower than .5 -- well, I don't know because</p> <p>25 I cannot see from this picture exactly what is 4:31PM</p> <p style="text-align: right;">Page 149</p> |



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| <p>1 pointing to what. So it's either very small or 4:31PM</p> <p>2 something is pointing somewhere else. So I agree.</p> <p>3 Q It's almost invisible, it's so small.</p> <p>4 Okay. So -- and according to this graph,</p> <p>5 the remaining resource is less than 400 MMBOE; 4:32PM</p> <p>6 right?</p> <p>7 A Yes. That's clear.</p> <p>8 Q That would be 113 net?</p> <p>9 A That would be what 113?</p> <p>10 Q Net. 4:32PM</p> <p>11 A Where are you reading that?</p> <p>12 Q To Anadarko.</p> <p>13 So there's gross, right, and then there's</p> <p>14 net?</p> <p>15 A You're reading that off this slide? 4:32PM</p> <p>16 Q I mean, you are aware of the different</p> <p>17 partners at Shen; right?</p> <p>18 A Yes.</p> <p>19 Q So that's what I'm saying, it's net?</p> <p>20 A You're saying -- okay. Yeah. I'm assuming 4:32PM</p> <p>21 what they are plotting is net, yes.</p> <p>22 Q Okay. Well, yes. And do you see here</p> <p>23 there is two asterisks next to Shenandoah?</p> <p>24 A Yes, that I see.</p> <p>25 Q What does that mean? 4:33PM</p> <p style="text-align: right;">Page 150</p>   | <p>1 A No, it doesn't appear to be the lowest on 4:34PM</p> <p>2 either particular axis. Each axis has something</p> <p>3 lower.</p> <p>4 Q What is lower on the ROR?</p> <p>5 A On the ROR axis? 4:34PM</p> <p>6 Q Sorry, what is the -- it's the lowest with</p> <p>7 both; right?</p> <p>8 A The lowest on the ROR axis is GNB.</p> <p>9 Q Sorry, withdrawn.</p> <p>10 If -- in other words, Shenandoah had to 4:34PM</p> <p>11 have a favored oil price of \$10 more than any other</p> <p>12 asset on this slide deck to avoid showing a zero;</p> <p>13 right, or a negative result?</p> <p>14 A I don't know. I mean, all I know is what it</p> <p>15 says, it says 70. I don't know where it would be if 4:35PM</p> <p>16 you did it at a different value. I don't know why</p> <p>17 they did that.</p> <p>18 Q Right. So setting aside the axis, Shen is</p> <p>19 the lowest NAV; correct?</p> <p>20 A You're talking about the X-axis, the lowest 4:35PM</p> <p>21 number?</p> <p>22 Q Forget about the axis, the lowest NAV?</p> <p>23 A You're basing that on the size of the dot?</p> <p>24 Q You have no reason to disagree with that;</p> <p>25 right? 4:35PM</p> <p style="text-align: right;">Page 152</p> |
| <p>1 A Well, according to the legend down at the 4:33PM</p> <p>2 bottom, it says, "Shenandoah metrics shown at \$70 a</p> <p>3 barrel."</p> <p>4 Q Okay. So Shenandoah is shown at 70 and no</p> <p>5 other project is; correct? 4:33PM</p> <p>6 A Yes, probably because the -- yes. I won't</p> <p>7 speculate as to why, but yes.</p> <p>8 Q Why do you think that is?</p> <p>9 A Well, I would have to speculate as to why</p> <p>10 that is. There is a number of reasons one could do 4:33PM</p> <p>11 that.</p> <p>12 It could have something to do with the</p> <p>13 quality of the oil. It could have something to do</p> <p>14 with the expected price in the future. It could</p> <p>15 have something to do with the profit margin in the 4:33PM</p> <p>16 Gulf of Mexico.</p> <p>17 So I don't know.</p> <p>18 Q I mean, logically speaking, and you</p> <p>19 probably know this from looking at documents, it</p> <p>20 would have been a zero had it been run at 60? 4:34PM</p> <p>21 A Yes, I don't know that. I don't know why</p> <p>22 they did that.</p> <p>23 Q Okay. Even at 70, the Shenandoah's NAV</p> <p>24 was the lowest of all of Anadarko's prospects on</p> <p>25 this graph; right? 4:34PM</p> <p style="text-align: right;">Page 151</p> | <p>1 A Yes, I don't -- I don't know where -- I 4:35PM</p> <p>2 cannot either disagree or agree with it because I</p> <p>3 don't know where you're getting that fact from. So</p> <p>4 that could be true. I don't know.</p> <p>5 I don't see that information from this 4:36PM</p> <p>6 graph.</p> <p>7 Q Okay. Maybe the next slide will help</p> <p>8 clarify.</p> <p>9 A Okay.</p> <p>10 Q So recall again that the slide in the 4:36PM</p> <p>11 bubble corresponds to the NAV; right?</p> <p>12 A Yes.</p> <p>13 Q Okay. So let's look at the next line</p> <p>14 because I think you just couldn't see the speck that</p> <p>15 was Shenandoah. 4:36PM</p> <p>16 Do you see on this next slide, slide 91,</p> <p>17 that Shenandoah is the smallest bubble?</p> <p>18 A Sure, yes, I do between Colombia and</p> <p>19 Mozambique, right, it's a little small bubble.</p> <p>20 Q Yes, I mean, it's like a dot? 4:36PM</p> <p>21 A Yes.</p> <p>22 Q You see also that it's higher on the</p> <p>23 increasing capital intensity side?</p> <p>24 A Yes, I see that. Higher than what, but yes,</p> <p>25 higher than some things. 4:37PM</p> <p style="text-align: right;">Page 153</p>                                  |

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| <p>1 Q Okay. 4:37PM</p> <p>2 A But I think the real description, if I</p> <p>3 remember this right, is there is a slide later down</p> <p>4 that talks specifically about Shenandoah's strengths</p> <p>5 and weaknesses. 4:37PM</p> <p>6 So then these numbers are actually -- it's</p> <p>7 actually slide 105.</p> <p>8 Q So let's turn to that.</p> <p>9 A Okay.</p> <p>10 Q Let's look at this. 4:38PM</p> <p>11 So the weaknesses here, do you see the</p> <p>12 reference to "Current development economics</p> <p>13 challenged"?</p> <p>14 A Yes, this is before Shen 5. So yes, after</p> <p>15 Shen 4, that was true. 4:38PM</p> <p>16 Q Okay. And after Shen 5, the MMBOE or the</p> <p>17 resource size reduced by almost 100 MMBOE; correct?</p> <p>18 A The mean or the P50 did, the uncertainty</p> <p>19 reduced quite a bit, which is kind of what you want to</p> <p>20 account for. But yes. 4:39PM</p> <p>21 Q Look, I'm asking you a very specific</p> <p>22 question. You're trying to answer with a different</p> <p>23 answer. And I understand why you're doing that.</p> <p>24 But let's just answer my question.</p> <p>25 Which is after Shen 5, the resource size 4:39PM</p> <p style="text-align: right;">Page 154</p> | <p>1 they were referring to. 4:40PM</p> <p>2 Q Why wouldn't it be in the same bullet?</p> <p>3 A I don't know, but the 20,000 psi development</p> <p>4 brings hurdles other than just the blowout preventer,</p> <p>5 right? It brings a hurdle with a drilling rig, it 4:40PM</p> <p>6 brings a hurdle with the equipment you have to use.</p> <p>7 So it brings some engineering hurdles with</p> <p>8 it, which, like I said, aren't insurmountable but</p> <p>9 typically add time and cost.</p> <p>10 Q So it's your testimony that there were no 4:41PM</p> <p>11 technological hurdles other than the 20K psi?</p> <p>12 A There are no technical showstoppers.</p> <p>13 Q But that's not what I asked you. My</p> <p>14 question was --</p> <p>15 A There's always hurdles, the question is how 4:41PM</p> <p>16 high are they.</p> <p>17 Q So I was asking a really simple question,</p> <p>18 which is: Is it your testimony that there was no</p> <p>19 other technological hurdle other than the 20K psi?</p> <p>20 A And the answer is no, there are always 4:41PM</p> <p>21 hurdles.</p> <p>22 Q Okay. Including asphaltene mitigation?</p> <p>23 A I would not call that a hurdle, I would call</p> <p>24 that just something you have to plan for.</p> <p>25 Q So it's your testimony that that was not a 4:41PM</p> <p style="text-align: right;">Page 156</p> |
| <p>1 reduced by almost 100 MMBOE; correct? 4:39PM</p> <p>2 A The mean estimate of the resource side</p> <p>3 reduced by 100 MMBOE approximately.</p> <p>4 Q Let's turn back to the weaknesses on this</p> <p>5 slide. 4:39PM</p> <p>6 "Geologic uncertainty and the presence of</p> <p>7 faulting affect development risks," you have no</p> <p>8 reason to dispute that; right?</p> <p>9 A No, that's true.</p> <p>10 Q The technological hurdles increase 4:39PM</p> <p>11 regulatory and operational risk, you agree with</p> <p>12 that?</p> <p>13 A I agree with that. It could possibly affect</p> <p>14 time to first production. There's probably very</p> <p>15 little risk in actually accomplishing it. The risk 4:39PM</p> <p>16 was in the time.</p> <p>17 Q So there is a reference below to</p> <p>18 20,000 psi-rated drilling rig.</p> <p>19 Do you see that?</p> <p>20 A Yes. 4:40PM</p> <p>21 Q So the technological hurdles that are</p> <p>22 being discussed in the bullet above that, fair to</p> <p>23 say that that's something other than that particular</p> <p>24 issue of 20K psi?</p> <p>25 A No, I believe that's the technical issue 4:40PM</p> <p style="text-align: right;">Page 155</p>                            | <p>1 hurdle? 4:41PM</p> <p>2 A Not anything that was -- required any</p> <p>3 significant amount of concern.</p> <p>4 Q Okay. So you had mentioned that this was</p> <p>5 after Shen 4; right? 4:42PM</p> <p>6 A Yes.</p> <p>7 Q Okay. Do you know when Shen 5 TD'ed?</p> <p>8 A Depending if we're talking about -- I</p> <p>9 believe, though, it was at the -- in 2016, somewhere</p> <p>10 around the end of 2016. 4:42PM</p> <p>11 Q So this board of directors slide is from</p> <p>12 August 1st and 2nd, 2016. So does that refresh your</p> <p>13 recollection that this was after Shen 5?</p> <p>14 A Well, I think what -- under "Opportunity" it</p> <p>15 says, "Incorporation of Shen 5 results will improve 4:42PM</p> <p>16 the economics." So obviously the results of Shen 5</p> <p>17 are not included in here.</p> <p>18 Q And again, Shen 5 actually ended up with a</p> <p>19 decrease in the resource size; correct?</p> <p>20 A Shen 5 resulted in a decrease in the mean 4:43PM</p> <p>21 resource size.</p> <p>22 Q Okay. At the bottom of the same slide,</p> <p>23 there is a "Key Play Statistics."</p> <p>24 Do you see that?</p> <p>25 A Yes. 4:44PM</p> <p style="text-align: right;">Page 157</p>   |

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| <p>1 Q And it says the MMBOE is 113? 4:44PM</p> <p>2 A Yes.</p> <p>3 Q Okay. And it also says that NAV at \$70 is</p> <p>4 .01; right?</p> <p>5 A Yes. 4:44PM</p> <p>6 Q And again, this was a board of directors</p> <p>7 presentation in July of 2016; correct?</p> <p>8 A Yes, the undeveloped resources, the -- is</p> <p>9 the remaining resource to be -- I believe the</p> <p>10 remaining resource to be proved up because 113 is 4:44PM</p> <p>11 already less than what you just said they were</p> <p>12 estimating it from MMRA.</p> <p>13 So in other words, this is undeveloped</p> <p>14 resource, there's -- the current resource that they</p> <p>15 are considering already discovered and developed, so 4:45PM</p> <p>16 this is what's remaining. So it's not the total</p> <p>17 resource.</p> <p>18 Q Okay. So under the strengths it says,</p> <p>19 "Shen 5 results are similar to Shen 2." Right?</p> <p>20 A Yes. 4:45PM</p> <p>21 Q So the results had already come in for</p> <p>22 Shen 5?</p> <p>23 A Yes, the preliminary results had, yes. The</p> <p>24 impact of them had not been fully calculated into</p> <p>25 everything yet. 4:45PM</p> <p style="text-align: right;">Page 158</p>  | <p>1 internally before the well actually TDs. Because 4:47PM</p> <p>2 there's lots of stuff that gets done.</p> <p>3 And so the fact that Shen 6 was a wet</p> <p>4 well, I believe I would have to check, but there is</p> <p>5 a good chance that because Shen 6 was wet and they 4:47PM</p> <p>6 knew that before TD, that they actually went ahead</p> <p>7 with the write-down in May.</p> <p>8 Q So when did they find out that it was wet?</p> <p>9 A I would have to look at the records. I</p> <p>10 don't -- let me see in the report. I have something 4:47PM</p> <p>11 about timing, I think.</p> <p>12 So -- no, you may be right. I think what</p> <p>13 they decided on -- I think I'm wrong on that. I</p> <p>14 think actually that wasn't the reason.</p> <p>15 I think the reason they wrote down is they 4:48PM</p> <p>16 realized that they were never going to use those</p> <p>17 other wells, so they wrote down wells and volumes</p> <p>18 that they knew could not exist and that they were</p> <p>19 not going to use.</p> <p>20 So they probably did that -- I am trying 4:48PM</p> <p>21 to remember the dates. I know they did that in May</p> <p>22 of 2017. Was it May 2017 or -- yes. 2016, but I</p> <p>23 think Shen 6 drilled that later, 2017.</p> <p>24 So I'm not exactly sure, thinking about it</p> <p>25 out loud, but I'm sure it's because there were 4:48PM</p> <p style="text-align: right;">Page 160</p> |
| <p>1 Q And what is the basis for your testimony? 4:45PM</p> <p>2 A Well, I don't know why you would say under</p> <p>3 opportunities, incorporation of the results will</p> <p>4 improve the economics, okay.</p> <p>5 So obviously they haven't included them in 4:45PM</p> <p>6 the economic calculation yet and even though that</p> <p>7 volume -- that mean volume has gone down, the</p> <p>8 overall result has -- they expect to improve it.</p> <p>9 Q Expect to. But you've not seen the workup</p> <p>10 on that; right? 4:46PM</p> <p>11 A No, not on this slide.</p> <p>12 Q You have not -- you don't know the</p> <p>13 document that had that workup; right?</p> <p>14 A They did calculations later on after Shen 5</p> <p>15 before drilling Shen 6. So there were some 4:46PM</p> <p>16 presentations as part of the justification for</p> <p>17 drilling Shen 6 that showed information about how</p> <p>18 the -- how the results of Shen 5 were fully</p> <p>19 incorporated. But that was much after this. That was</p> <p>20 right before Shen 6. 4:46PM</p> <p>21 Q And the company decided to write down</p> <p>22 Shenandoah before the results of Shen 6 were known;</p> <p>23 correct?</p> <p>24 A Before -- I'm not exactly sure because</p> <p>25 Shen 6 -- lots of times there's results that are known 4:47PM</p> <p style="text-align: right;">Page 159</p> | <p>1 certain -- there was enough knowledge then to know 4:48PM</p> <p>2 that certain volumes being carried on the books were</p> <p>3 not accurate. So they started writing some of it</p> <p>4 down.</p> <p>5 MS. JENSEN: I'm going to introduce 4:49PM</p> <p>6 another document.</p> <p>7 All right. You should be able to see</p> <p>8 what's been marked as Exhibit 533.</p> <p>9 (Whereupon, Exhibit 533 was marked for</p> <p>10 identification.) 1:33PM</p> <p>11 THE WITNESS: Yes.</p> <p>12 MS. JENSEN: For the record, this is</p> <p>13 APC-00264139. Let me say that again in case I</p> <p>14 missed a number. APC-00264139.</p> <p>15 Q Do you see it? 4:50PM</p> <p>16 A Yes, I do.</p> <p>17 Q And have you seen this document before?</p> <p>18 A I'm just looking at it.</p> <p>19 Okay. I don't recall if I've seen this</p> <p>20 specific document before or not. 4:50PM</p> <p>21 Q Okay. Just reorienting to the last</p> <p>22 document that we saw, you recall it was a board of</p> <p>23 directors PowerPoint presentation for July of 2016?</p> <p>24 A Yes.</p> <p>25 Q Okay. And does this appear to be around 4:50PM</p> <p style="text-align: right;">Page 161</p>  |

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| 1 the same time frame? 4:51PM                               | 1 there. Okay. 4:54PM  |
| 2 A According to the dates there, yes. This is              | 2 And when she says that otherwise it would                      |
| 3 July 2016.  | 3 be showing zero, fair to infer from that you're                |
| 4 Q Okay. Great. And there is a reference                   | 4 talking about the NAV?   |
| 5 here to BOD slides that are attached to this email 4:51PM | 5 A Yes, I don't -- I couldn't interfere 4:54PM                  |
| 6 and this is an email from Gennifer Kelly to Ryan          | 6 directly exactly that. I mean, one might make that             |
| 7 Morgan on July 27th, 2016.                                | 7 inference. But to know for sure, I would have to look          |
| 8 And if you scroll down to the slides                      | 8 at it a lot more closely and actually calculate to see         |
| 9 below, does the slide about Shenandoah look               | 9 if that's the number that goes to zero.                        |
| 10 familiar? 4:51PM   | 10 Q Okay. In any event, she's saying without 4:54PM             |
| 11 A Just a second. Let me make sure I can see              | 11 inference that it would be showing zeros; right?              |
| 12 the whole slide.   | 12 A She said it would show -- some number in                    |
| 13 Yes, that looks very similar to the other                | 13 here would show zero.   |
| 14 one.   | 14 MS. JENSEN: Okay. All right. We've been                       |
| 15 Q The other one that we saw that was a board 4:52PM      | 15 going for about an hour. Let's just take a quick 4:54PM       |
| 16 of directors slide show?                                 | 16 break.  |
| 17 A Yes.   | 17 THE WITNESS: Okay.  |
| 18 Q Now let's scroll back up to the email and              | 18 THE VIDEOGRAPHER: We're off the record.                       |
| 19 the email says, on the second paragraph there from       | 19 It's 4:54 p.m.  |
| 20 Gennifer Kelly to Ryan Morgan, "Shenandoah is 4:52PM     | 20 (Recess taken.) 4:55PM  |
| 21 footnoted because the case was not selected in our       | 21 THE VIDEOGRAPHER: Back on the record.                         |
| 22 60-dollar base case. We used a 70-dollar run where       | 22 It's 5:05 p.m.  |
| 23 it was selected to get our numbers so that we            | 23 BY MS. JENSEN:  |
| 24 wouldn't be showing zeros."                              | 24 Q Welcome back.   |
| 25 Do you see that? 4:52PM                                  | 25 Do you believe that fluid quality is an 5:05PM                |
| Page 162  | Page 164   |
| 1 A Yes. 4:52PM   | 1 important consideration in oil production? 5:05PM              |
| 2 Q And you understand that that would mean                 | 2 A Yes.   |
| 3 that Shenandoah would be showing zeros at a base          | 3 Q And that it can ultimately impact the                        |
| 4 case run at the same price deck as other fields           | 4 development system design?                                     |
| 5 which were still profitable? 4:52PM                       | 5 A Yes. 5:06PM  |
| 6 A That's -- it claims that some numbers would             | 6 Q And the percent of oil that can be                           |
| 7 be showing zeros, it's not clear which ones, but yes.     | 7 economically recovered?  |
| 8 Q This was the numbers where they had the                 | 8 A Yes.   |
| 9 NAV; right?   | 9 Q And the price paid per barrel?                               |
| 10 A No, it doesn't say that. It says "to get 4:53PM        | 10 A Yes. 5:06PM   |
| 11 our numbers," it doesn't say specifically which          | 11 Q What does it mean to commingle fluid in a                   |
| 12 numbers, but that could be. But I can't tell from        | 12 wellbore?   |
| 13 this note which numbers would be zero.                   | 13 A Every individual sand in a field, if the                    |
| 14 Q Sure. So if you look down at the                       | 14 sands are separated by some distance, even if it's            |
| 15 Shenandoah slide again. 4:53PM                           | 15 small, and if they have any difference in either their 5:06PM |
| 16 A Yes.   | 16 pressures or their fluid details, then one can either         |
| 17 Q You see there is an NAV number, it's a                 | 17 produce them each separately or one can open up a             |
| 18 pretty low number, isn't it?                             | 18 wellbore to both of them at the same time.                    |
| 19 A Just a second.   | 19 If you open it up to two different                            |
| 20 MS. PHILLIPS: Objection, vague. 4:53PM                   | 20 reservoirs like that at the same time, you would 5:07PM       |
| 21 THE WITNESS: I see NAV at \$70.00 of 0.01.               | 21 refer to that as commingling.                                 |
| 22 BY MS. JENSEN:   | 22 Q What is your understanding of why                           |
| 23 Q Right. Fairly low number; right?                       | 23 engineers would want to commingle fluids?                     |
| 24 A 0.01 is 0.01.  | 24 A Well, if you can commingle fluids, some of                  |
| 25 Q Almost zero if there was one less number 4:54PM        | 25 the advantages are you -- if you didn't commingle 5:07PM      |
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| <p>1 them, you would have to produce one and then produce 5:07PM</p> <p>2 the other. You could either do that in the same</p> <p>3 wellbore by doing a recompletion, you could do it in</p> <p>4 the same wellbore by putting in smart completions that</p> <p>5 allow you to switch back and forth between them or you 5:07PM</p> <p>6 could access them through another well.</p> <p>7 So one of the advantages -- all of those</p> <p>8 things cost something. Whether I'm going to do one</p> <p>9 before the other and delay the production, whether</p> <p>10 I'm going to put a special completion -- smart 5:08PM</p> <p>11 completion equipment in the well or whether I'm</p> <p>12 going to drill a separate well, they all cost</p> <p>13 something. So one of the advantages of commingling</p> <p>14 is it saves you money.</p> <p>15 Q Okay. And when is it not possible to 5:08PM</p> <p>16 commingle fluids?</p> <p>17 A There are times -- it's always possible,</p> <p>18 there are just ramifications that might be</p> <p>19 unacceptable if you do.</p> <p>20 So some of the ramifications are if the 5:08PM</p> <p>21 pressures are different by very much, then the</p> <p>22 higher pressure one will produce before the lower</p> <p>23 pressure one. Just because it's easier -- the fluid</p> <p>24 at a high pressure will flow to the wellbore first.</p> <p>25 If the quality of the reservoir is 5:08PM</p> <p style="text-align: right;">Page 166</p> | <p>1 zones. There are -- there is equipment, you can put 5:10PM</p> <p>2 that on a well now, it has been for a while where you</p> <p>3 can open one zone and then close it off and then open</p> <p>4 the other zone and then close it off. You can do that</p> <p>5 remotely. 5:10PM</p> <p>6 So you can alternate between the zones.</p> <p>7 That would not commingle them.</p> <p>8 You could also inject something down there</p> <p>9 to account for the differences in the fluid and</p> <p>10 that's pretty common to put a line down, inject some 5:10PM</p> <p>11 type of solvent. If one oil is heavier than the</p> <p>12 other, that will often help.</p> <p>13 You can also do it by just producing one</p> <p>14 zone, the deeper -- typically the deeper zone first</p> <p>15 and then when that zone is pretty much produced, you 5:11PM</p> <p>16 just put cement in the bottom of the well and you</p> <p>17 punch some holes into the next zone. And then you</p> <p>18 produce those. Those are referred to as uphole</p> <p>19 recompletions.</p> <p>20 Q Let me stop you there. 5:11PM</p> <p>21 A Okay.</p> <p>22 Q So you mentioned equipment and when did</p> <p>23 that equipment become available?</p> <p>24 A That equipment is available today to do</p> <p>25 that. You put that in the well -- you design the well 5:11PM</p> <p style="text-align: right;">Page 168</p>                              |
| <p>1 different so that fluids can flow in one easy -- 5:08PM</p> <p>2 more easily than the other, then one of the</p> <p>3 reservoirs will preferentially produce before the</p> <p>4 other and that usually means you have to do</p> <p>5 something. 5:09PM</p> <p>6 The other times you would -- so you might</p> <p>7 not want to commingle in those case. You might not</p> <p>8 want to commingle if the fluids are very, very</p> <p>9 different.</p> <p>10 So if one fluid is -- has different 5:09PM</p> <p>11 characteristics and qualities than the other, you</p> <p>12 might not want to mingle them. There are rare</p> <p>13 occasions where you actually would. But they are</p> <p>14 pretty rare.</p> <p>15 So some of the kind of differences you 5:09PM</p> <p>16 might see in the fluid besides pressure that you</p> <p>17 would have to account for is obviously asphaltenes,</p> <p>18 waxes and if there's any difference in the gas ratio</p> <p>19 or in the quality of the oil. So those things would</p> <p>20 all -- you would have to account for them in some 5:10PM</p> <p>21 way if you were going to commingle.</p> <p>22 Q Okay. I think you hit on this earlier,</p> <p>23 but when it's not possible to commingle, an</p> <p>24 alternative would be isolating zones?</p> <p>25 A You could isolate -- you could isolate 5:10PM</p> <p style="text-align: right;">Page 167</p>  | <p>1 for that and you put that in the well at the time you 5:11PM</p> <p>2 what they call complete the well.</p> <p>3 Q What is the equipment called?</p> <p>4 A It's called completion equipment. So it's</p> <p>5 typically tubing, valves, sliding sleeves, and it's 5:11PM</p> <p>6 got a bunch of components to it. But it's all just</p> <p>7 generally referred to as completion equipment.</p> <p>8 Q When was that available, made available?</p> <p>9 A That is put in the well when you are getting</p> <p>10 ready to, quote, complete it. Because there are other 5:12PM</p> <p>11 things you have to do. When you leave a well,</p> <p>12 typically you seal up so the fluids can't flow in.</p> <p>13 So you have to go and you have to dissolve</p> <p>14 that out. You typically -- when you put the</p> <p>15 completion equipment in, you acidize the well in 5:12PM</p> <p>16 order to clean it.</p> <p>17 Q Right. But the equipment that you're</p> <p>18 referring to, you said it's available now; right?</p> <p>19 A Yes, today. I mean that's standard</p> <p>20 equipment. 5:12PM</p> <p>21 Q Right. And when was that first available</p> <p>22 in the industry?</p> <p>23 A Sliding sleeves and smart completions have</p> <p>24 been available, obviously using them in Brunei in</p> <p>25 2000 -- in 1999, 2000, so they've been available for a 5:12PM</p> <p style="text-align: right;">Page 169</p> |

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| <p>1 long time. 5:12PM</p> <p>2 Q And you also mentioned chemical completion</p> <p>3 or chemical injection?</p> <p>4 A Yes.</p> <p>5 Q And is that xylene soaks? 5:12PM</p> <p>6 A There is a couple of different ones, they</p> <p>7 have different reasons you use them. So you -- for</p> <p>8 purposes of mingled reservoirs, xylene is probably the</p> <p>9 most common, but you put other kinds of chemicals down</p> <p>10 the well. 5:13PM</p> <p>11 You put acids down in order to clean up</p> <p>12 the pore space near the wellbore. You put xylene</p> <p>13 down, you put other kinds of solvents down in the</p> <p>14 well.</p> <p>15 So there's a whole range of those that 5:13PM</p> <p>16 would -- you have the option to choose from.</p> <p>17 Typically you will give an example of the well fluid</p> <p>18 to a professional engineering company who will tell</p> <p>19 you what the best fluid they have is to use in that</p> <p>20 circumstance. 5:13PM</p> <p>21 Q Now, an alternative would be drilling</p> <p>22 individual wells for each zone; right?</p> <p>23 A That's a possibility. If the zones are big</p> <p>24 enough that they could support the independent cost of</p> <p>25 a well, then that would be a choice you would 5:14PM</p> <p style="text-align: right;">Page 170</p>                         | <p>1 if the pressures aren't very different, then very 5:15PM</p> <p>2 soon the commingling is fine.</p> <p>3 Q Right. But if they are different</p> <p>4 pressures, then the commingling is not fine?</p> <p>5 A Right. But these reservoirs are at, you 5:15PM</p> <p>6 know, 15, 16, 17,000 psi and the difference between</p> <p>7 the different sands is only a few hundred.</p> <p>8 Q Slower rate of production impacts the NPV</p> <p>9 because you have to discount the value of the</p> <p>10 production number a longer period of time; correct? 5:15PM</p> <p>11 A Yes.</p> <p>12 Q And so if you're unable to commingle the</p> <p>13 fluids, it would negatively impact the NPV?</p> <p>14 A Depending on how you do it, to a small</p> <p>15 effect or to a large effect, yes, because it does not 5:16PM</p> <p>16 positively impact it, I can say that.</p> <p>17 Q Let's put it this way. So it does not</p> <p>18 positively impact the economics?</p> <p>19 A It may not actually -- commingling may</p> <p>20 improve the economics and so it just depends on what 5:16PM</p> <p>21 your alternatives are.</p> <p>22 Q Right. The inability to commingle?</p> <p>23 A Well, the --</p> <p>24 Q You kind of laughed. I mean, the</p> <p>25 inability to commingle would negatively impact the 5:16PM</p> <p style="text-align: right;">Page 172</p> |
| <p>1 consider. 5:14PM</p> <p>2 Q And either way, it would require multiple</p> <p>3 wells that would drive up the cost; right?</p> <p>4 A Well, if alls you do is put sliding sleeves</p> <p>5 in the same well, that doesn't require a substantial 5:14PM</p> <p>6 cost.</p> <p>7 But if you're going to drill a separate</p> <p>8 well, that would cost the cost of a well, yes.</p> <p>9 Q Do you agree that isolating zones for</p> <p>10 production in a multi-zone scenario would require 5:14PM</p> <p>11 intelligent completion to avoid commingling?</p> <p>12 A That's one approach. You could do a smart</p> <p>13 completion to avoid the commingling. That would be</p> <p>14 one approach.</p> <p>15 Q And so another problem with isolating 5:14PM</p> <p>16 zones would be that the production occurs at a</p> <p>17 slower rate than when the fluids are commingled;</p> <p>18 correct?</p> <p>19 A It depends on how different the zones are.</p> <p>20 Right. If the zones are not very different, then the 5:15PM</p> <p>21 answer is no. It produces fine.</p> <p>22 If the zones are very, very different,</p> <p>23 then yes, it could stretch things out.</p> <p>24 Remember, the higher pressure zone will</p> <p>25 lower down until whatever the other pressure is. So 5:15PM</p> <p style="text-align: right;">Page 171</p> | <p>1 economics? 5:16PM</p> <p>2 A The inability to commingle will raise your</p> <p>3 costs. The question is does it also raise your</p> <p>4 production and your income? So that's an economic</p> <p>5 calculation that has to be made. 5:16PM</p> <p>6 Q But all things being equal, if all other</p> <p>7 things held steady, then it would negatively impact</p> <p>8 the economics?</p> <p>9 A No, because if you're producing twice as</p> <p>10 much oil from two zones, okay, then the net present 5:17PM</p> <p>11 value of that could outweigh the actual cost of doing</p> <p>12 a smart completion. That's why you would do it.</p> <p>13 So it just depends on what you're costing</p> <p>14 versus what you're getting. So you have to do that</p> <p>15 calculation. 5:17PM</p> <p>16 Q So you have to do a calculation for a</p> <p>17 particular project. You cannot decide that in a</p> <p>18 vacuum?</p> <p>19 A Correct.</p> <p>20 Q Now, asphaltene instability can have major 5:17PM</p> <p>21 implications for field development; right?</p> <p>22 A If one does not account for them, it can</p> <p>23 have very major implications.</p> <p>24 Q So it could stretch from expenditure risk</p> <p>25 for one well to that of an entire field; right? 5:17PM</p> <p style="text-align: right;">Page 173</p>                                    |



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| <p>1 A Well, the worst thing -- well, you would 5:17PM</p> <p>2 never allow a situation to occur where you would put</p> <p>3 in jeopardy a field because of asphaltenes. There are</p> <p>4 always inexpensive mitigation steps that you could</p> <p>5 take account for it. 5:18PM</p> <p>6 Q So regardless of potential mitigation, it</p> <p>7 does have impacts?</p> <p>8 A It does have -- it impacts your plan, yes.</p> <p>9 Q Right. So -- and also commingling oil</p> <p>10 from different zones or reservoirs can exacerbate 5:18PM</p> <p>11 the asphaltene deposition issues; right?</p> <p>12 A Depending on what the asphaltene dropout</p> <p>13 pressure is in one reservoir versus the other</p> <p>14 reservoir, if you didn't account for it, you could</p> <p>15 create a problem. 5:18PM</p> <p>16 Q That's because commingling zones increase</p> <p>17 asphaltene onset pressures; right?</p> <p>18 A It can. It doesn't always and it's -- it</p> <p>19 can change the dropout pressure, but the dropout</p> <p>20 pressure -- estimating and measuring dropout pressures 5:19PM</p> <p>21 is not an exact science, so it's always something that</p> <p>22 you make sure you err on the safe side of.</p> <p>23 So you don't try to run it very close to</p> <p>24 exactly the dropout pressure.</p> <p>25 Q Can you refer to asphaltene onset 5:19PM</p> <p style="text-align: right;">Page 174</p> | <p>1 continue to do it without taking action early on. 5:20PM</p> <p>2 Q I would like to show you a document.</p> <p>3 MS. JENSEN: You should be able to see</p> <p>4 what's been marked as Exhibit 534. And the Bates</p> <p>5 number for this document is APC-01760992. 5:22PM</p> <p>6 (Whereupon, Exhibit 534 was marked for</p> <p>7 identification.)</p> <p>8 BY MS. JENSEN:</p> <p>9 Q Let me know when you're able to see this</p> <p>10 document. 5:22PM</p> <p>11 A I can see it.</p> <p>12 Q Oh, great. That was fast. Okay.</p> <p>13 Do you recognize this document?</p> <p>14 A I looked at a lot of documents, but this one</p> <p>15 looks familiar. So I don't see anything in there that 5:23PM</p> <p>16 makes me think I didn't see it.</p> <p>17 Q Okay. So this is an article that you</p> <p>18 produced in this case?</p> <p>19 A Right.</p> <p>20 MS. JENSEN: And for the record, this is a 5:23PM</p> <p>21 document or article with a -- that's entitled</p> <p>22 "Asphaltene Onset Pressure Uncertainty and Other</p> <p>23 Asphaltene Issues and Field Development Planning."</p> <p>24 Q You refer to this paper on asphaltene</p> <p>25 mitigation? 5:23PM</p> <p style="text-align: right;">Page 176</p> |
| <p>1 pressures with an acronym? 5:19PM</p> <p>2 A AOP.</p> <p>3 Q So I'm going to refer to AOP for ease of</p> <p>4 use there.</p> <p>5 So AOPs cause precipitation and deposition 5:19PM</p> <p>6 in tubing, impeding the oil flow; right?</p> <p>7 A It could. But if you inject a solvent at</p> <p>8 the face of the reservoir, then that will stabilize --</p> <p>9 or keep the asphaltene in solution and your risk of</p> <p>10 deposition along the equipment is highly reduced. 5:19PM</p> <p>11 It also depends upon the pressure drop</p> <p>12 between the reservoir and the surface. So if that</p> <p>13 pressure drop is big, you run a bigger risk. If</p> <p>14 that pressure drop is small and it doesn't reach</p> <p>15 asphaltene pressure, you have no risk. So it 5:20PM</p> <p>16 depends.</p> <p>17 Q So part of the risk is that asphaltenes</p> <p>18 can plug tubing; right?</p> <p>19 A It can, but no one ever allows that to</p> <p>20 happen because you have pressure measurements in a 5:20PM</p> <p>21 wellbore and if it starts to -- if the size of the</p> <p>22 tubing or in the tubing -- if the size of the --</p> <p>23 effective size of the tubing starts to shrink, you'll</p> <p>24 see that in your pressure measurement right away.</p> <p>25 So you would never sit there and just 5:20PM</p> <p style="text-align: right;">Page 175</p>                                       | <p>1 A Yes. 5:23PM</p> <p>2 Q And did you consider this document in</p> <p>3 forming your opinions?</p> <p>4 A I considered this document as consistent</p> <p>5 with my experiences with asphaltenes. 5:24PM</p> <p>6 Q This was published in 2017; correct?</p> <p>7 A Let me take a look. This was a paper</p> <p>8 presented in 2017 at the Offshore Technology</p> <p>9 Conference.</p> <p>10 Q Do you know when in 2017 it was -- 5:24PM</p> <p>11 A Yes, well, it says on there, May 1st through</p> <p>12 4th. Before COVID, the Offshore Technology Conference</p> <p>13 was always in Houston the first weekend in May.</p> <p>14 Q This came out in May of 2017?</p> <p>15 A Yes. 5:24PM</p> <p>16 Q I would like to turn your attention to</p> <p>17 Page 10.</p> <p>18 A It's Page -- it's Page 10 is the one with</p> <p>19 loss of PI due to asphaltene accumulation in the near</p> <p>20 wellbore. 5:25PM</p> <p>21 Q Right. What is PI?</p> <p>22 A Production index.</p> <p>23 Q Okay. This diagram is a productivity</p> <p>24 index?</p> <p>25 A Yes. 5:25PM</p> <p style="text-align: right;">Page 177</p>  |

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| <p>1 Q And this relates to the loss of 5:25PM</p> <p>2 productivity due to asphaltene accumulation; right?</p> <p>3 A Under the -- yes, under the conditions they</p> <p>4 did there, which was the particular mitigation that</p> <p>5 they did where they did -- in this case they just did 5:25PM</p> <p>6 xylene washes every once in awhile to clean it up at</p> <p>7 the reservoir face.</p> <p>8 Q This is something that you mentioned</p> <p>9 earlier; right?</p> <p>10 A Yes. 5:26PM</p> <p>11 Q That being the xylene soaks?</p> <p>12 A Yes, this is one way of tackling it, but</p> <p>13 yes.</p> <p>14 Q Okay. So in this chart it depicts that</p> <p>15 the productivity index was increased only 5:26PM</p> <p>16 temporarily?</p> <p>17 A Well, if all you do is soak it to solve it,</p> <p>18 you have not solved the problem, right. Then you take</p> <p>19 the soak away and you're back to the same condition.</p> <p>20 So yes. 5:26PM</p> <p>21 Q So -- but I'm just confirming that the --</p> <p>22 what you referenced earlier, xylene washes -- or</p> <p>23 here it's called washes; right? Is that the same?</p> <p>24 A No, not exactly because a xylene wash is a</p> <p>25 one-time thing. You push it in and you wash it down 5:26PM</p> <p style="text-align: right;">Page 178</p> | <p>1 doesn't -- that's situation where that has nothing to 5:28PM</p> <p>2 do with commingling. That's individual reservoirs and</p> <p>3 the individual reservoir's asphaltene dropout</p> <p>4 pressures at Shenandoah are pretty low, so that's not</p> <p>5 going to happen for many, many years. And it may not 5:28PM</p> <p>6 happen at all if you have reservoir pressure support</p> <p>7 from the aquifer.</p> <p>8 Q I asked a very simple question.</p> <p>9 MS. JENSEN: I'm going to move to strike</p> <p>10 everything after "right." 5:28PM</p> <p>11 Q Okay. So this talks about a loss of</p> <p>12 productivity and complete shut down. You would</p> <p>13 agree those are disastrous consequences; correct?</p> <p>14 A Yes.</p> <p>15 Q You had talked about the level of 5:29PM</p> <p>16 asphaltenes for Anadarko. Do you recall the level</p> <p>17 of asphaltenes in Anadarko -- I'm sorry, for</p> <p>18 Shenandoah?</p> <p>19 A Meaning the amount of asphaltene in solution</p> <p>20 in the -- 5:29PM</p> <p>21 Q The AOP?</p> <p>22 A Oh, the asphaltene onset pressure. The</p> <p>23 individual reservoirs I believe were fairly low. I</p> <p>24 don't recall the exact numbers, but I'm thinking</p> <p>25 somewhere between 5,000 and 9,000 psi. 5:29PM</p> <p style="text-align: right;">Page 180</p>   |
| <p>1 there. 5:26PM</p> <p>2 I'm talking about actually putting a</p> <p>3 continuous chemical injection system down in the</p> <p>4 wellbore so it runs continuously. So that's I think</p> <p>5 kind of one of the things they talk about when they 5:27PM</p> <p>6 show their little chart on Page 9.</p> <p>7 Q Let's look at the paragraph before, which</p> <p>8 is now on Page 9 of the article.</p> <p>9 A Yes.</p> <p>10 Q And you see that it says, "Mitigation and 5:27PM</p> <p>11 remediation can be planned or not during the field</p> <p>12 development plan but they do not often address the</p> <p>13 root cause of asphaltene instability. Most</p> <p>14 importantly, what happens in the reservoir stays</p> <p>15 usually in the reservoir, not allowing access to 5:27PM</p> <p>16 evidence collection for postmortem analysis, causing</p> <p>17 disastrous consequences such as loss of</p> <p>18 productivity, total shut down, expensive and time</p> <p>19 consuming xylene wash near production as shown"</p> <p>20 below. 5:28PM</p> <p>21 Do you see that?</p> <p>22 A Yes.</p> <p>23 Q And again, this is a paper that you cited</p> <p>24 in your report; correct?</p> <p>25 A Right. But -- yes. So -- but that 5:28PM</p> <p style="text-align: right;">Page 179</p>                    | <p>1 The issue was is when they commingle them, 5:29PM</p> <p>2 they got some numbers that were higher than that</p> <p>3 where the asphaltene dropout pressure for the</p> <p>4 commingled fluid might be higher.</p> <p>5 So that was part of the uncertainty in 5:29PM</p> <p>6 question that if you did nothing, that that would be</p> <p>7 of concern.</p> <p>8 Q In fact, the blended oils was 19,500 psig;</p> <p>9 correct?</p> <p>10 A Without the numbers in front of me, I don't 5:30PM</p> <p>11 know for sure. But it may be something around that</p> <p>12 order, yes. I remember it was quite high.</p> <p>13 Q Extraordinarily high; correct?</p> <p>14 A Well, when you commingle things,</p> <p>15 extraordinary is a -- not a very definite word but it 5:30PM</p> <p>16 was high.</p> <p>17 Q And in fact, ConocoPhillips had never seen</p> <p>18 anything like it before; correct?</p> <p>19 A Well, that's true, but ConocoPhillips nor</p> <p>20 anyone else had drilled a 20,000 psi reservoir yet, so 5:30PM</p> <p>21 this is new area.</p> <p>22 Q Would you agree that the paper that you</p> <p>23 referenced in your report talks about how there's</p> <p>24 5 percent of wells in the GoM that have severe</p> <p>25 issues related to asphaltenes? 5:31PM</p> <p style="text-align: right;">Page 181</p> |

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| <p>1 A I remember the paper said there were a 5:31PM<br/> 2 number of them in there. In fact, some of those<br/> 3 fields are fields that Anadarko operates and they have<br/> 4 successfully operated those fields with asphaltenes in<br/> 5 them, so they are experienced in it. 5:31PM<br/> 6 Q So compared to the 5 percent that is<br/> 7 indicated in this article, how many of the<br/> 8 Shenandoah wells had problems with asphaltene?<br/> 9 A I don't know the exact number. Remember,<br/> 10 you can only measure that if you have a -- if you have 5:31PM<br/> 11 a fluid sample, an oil fluid sample. And they did not<br/> 12 have fluid samples, obviously, at the wells that were<br/> 13 wet.<br/> 14 And so the key fluid sample that drove --<br/> 15 fluid samples that drove these measurements were 5:32PM<br/> 16 from Shen 4 sidetrack 1 and Shen 5.<br/> 17 So Shen 5 I believe had a slightly higher<br/> 18 level in some of the reservoirs of the solution of<br/> 19 asphaltenes.<br/> 20 Q And which Shenandoah wells encountered 5:32PM<br/> 21 tar?<br/> 22 A Tar is a slightly different issue. I<br/> 23 believe the Shen 5 well encountered what's referred to<br/> 24 typically as a tar mat. And these also are not<br/> 25 uncommon in deepwater. 5:32PM<br/> Page 182</p> | <p>1 et cetera. So -- but yes, I think I looked at one -- 5:34PM<br/> 2 at least one of them.<br/> 3 MS. JENSEN: All right. I've marked as<br/> 4 Exhibit 535 a native document produced in this<br/> 5 action and the Bates on it is APC-01183190. 5:36PM<br/> 6 (Whereupon, Exhibit 535 was marked for<br/> 7 identification.)<br/> 8 BY MS. JENSEN:<br/> 9 Q Do you see that?<br/> 10 A 535? 5:36PM<br/> 11 Q Yes.<br/> 12 A That's interesting, for some reason it came<br/> 13 across as coming at 10:25 a.m., I have no idea why<br/> 14 it's out of order with the rest of them. It's a<br/> 15 PowerPoint? 5:36PM<br/> 16 Q Yes, it's a PowerPoint. This appears to<br/> 17 be a PowerPoint dated April 5th, 2016.<br/> 18 A Yes, I have it up.<br/> 19 107 slides.<br/> 20 Q We won't go through all of them, I 5:37PM<br/> 21 promise.<br/> 22 A Let me look at the first few.<br/> 23 Yes.<br/> 24 Q You've seen this before?<br/> 25 A Yes. 5:37PM<br/> Page 184</p>   |
| <p>1 Q In fact, Shen 1, Shen 4 sidetrack 2, 5:32PM<br/> 2 Shen 5 and Shen 6 sidetrack 2 all encountered tar;<br/> 3 correct?<br/> 4 A They encountered different levels in<br/> 5 different places of tar mats, yes. 5:32PM<br/> 6 Q So the answer is yes; correct?<br/> 7 A Yes. They encountered different ones, yes.<br/> 8 Q So that's four out of six wells indicated<br/> 9 there was tar or asphaltene issues?<br/> 10 A Well, I don't know what you mean by 5:33PM<br/> 11 "issues." There are tar mats there which typically<br/> 12 are not extensive laterally. That's why you don't<br/> 13 find them consistently. And there is asphaltenes,<br/> 14 which one has to account for with mitigation<br/> 15 techniques. 5:33PM<br/> 16 Q So again, I believe the answer to my<br/> 17 question is yes; right?<br/> 18 A Okay. Yes, they encountered tar and yes,<br/> 19 they had fluids with asphaltenes.<br/> 20 Q Okay. Did you review any of the risk 5:33PM<br/> 21 registers at Shenandoah?<br/> 22 A I believe I looked at a risk register which<br/> 23 lists all the possible risk and then also talks about<br/> 24 what the -- usually it's broken up into what the<br/> 25 threats and the mitigations are and, you know, 5:34PM<br/> Page 183</p>   | <p>1 Q Now, if you fast click to 49. Apologies, 5:37PM<br/> 2 it's actually slide 50.<br/> 3 A "Asphaltene Mitigation," yes.<br/> 4 Q And the next slide?<br/> 5 A After 50 or -- where it says "Testing 5:38PM<br/> 6 Results" or you want to go one past that?<br/> 7 Q That one I've got under slide 50. I don't<br/> 8 know if yours is different, but that's what I show<br/> 9 is slide 50.<br/> 10 A Okay. I'm looking at "Shenandoah Testing 5:38PM<br/> 11 Results."<br/> 12 Q And the asphaltene onset pressures, what<br/> 13 we've been calling AOP; right?<br/> 14 A Yes.<br/> 15 Q Range from 8,000 to 14,000 psi? 5:38PM<br/> 16 A Yes.<br/> 17 Q The commingling resulted in 16,000 to<br/> 18 20,000 plus psi?<br/> 19 A Yes.<br/> 20 Q Earlier you testified that you had worked 5:38PM<br/> 21 on a project with AOP of I believe 4,000 psi?<br/> 22 A Well, but the pressure in the reservoir was<br/> 23 only about 12,000 psi, so yes.<br/> 24 Q Right. But the AOP was 4,000 psi?<br/> 25 A Yes. 5:39PM<br/> Page 185</p> |

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| <p>1 Q You'll agree that 8,000 to 14,000 psi is 5:39PM<br/>2 more severe or higher?</p> <p>3 A Well, the important parameter is the<br/>4 distance between the reservoir pressure and the onset<br/>5 pressure. So in this case, if the reservoir pressure 5:39PM<br/>6 is 20, you've got 6 to 12,000 psi range. In the<br/>7 case -- my case, it was 12 to 4, I had 8,000 psi<br/>8 range.</p> <p>9 Q Okay. And then with the commingling up to<br/>10 20,000 K here? 5:39PM</p> <p>11 A Yes, that makes it considerably worse.</p> <p>12 Q Right. Okay. In this slide it depicts<br/>13 that the precipitation in the tubing was expected<br/>14 from day one of production and that would be<br/>15 10,000 feet below mud line. 5:39PM</p> <p>16 Do you see that?</p> <p>17 A Yes. So what they did is they calculated<br/>18 with no mitigation what would happen within the tubing<br/>19 because as the fluid flows up the tubing, the pressure<br/>20 drops and the temperature changes. 5:40PM</p> <p>21 Q That means that according to the slide,<br/>22 which doesn't comment on that one way or the other,<br/>23 it means from the very beginning other they would be<br/>24 dealing with precipitation; correct?</p> <p>25 A With no mitigation, yes. 5:40PM<br/>Page 186</p> | <p>1 A Yes. 5:41PM</p> <p>2 Q And it says that most productivity gains<br/>3 from mitigation are gone with in 30 days; right?</p> <p>4 A That's what it says.</p> <p>5 Q Okay. And you have no reason to dispute 5:41PM<br/>6 that that's what Anadarko thought internally at the<br/>7 time; right?</p> <p>8 A No, these are obviously soaks, right,<br/>9 because you can see the timing of each soak. So<br/>10 that's not the only mitigation method. 5:42PM</p> <p>11 But yeah, if that's all you do is soaks,<br/>12 this is probably what you would get.</p> <p>13 Q It doesn't say here that it's only soaks,<br/>14 does it?</p> <p>15 A Well, if it was continuous, it wouldn't go 5:42PM<br/>16 up and down.</p> <p>17 Q But it doesn't say anything about soaks on<br/>18 the slide, does it?</p> <p>19 A It does not say anything about it.</p> <p>20 Q All right. Let's turn to the next slide, 5:42PM<br/>21 "Mitigations Success and Path Forward."</p> <p>22 A Yes.</p> <p>23 Q This one says that the recent solvents are<br/>24 much more effective but not restored for the long<br/>25 term; right? 5:42PM<br/>Page 188</p>  |
| <p>1 Q It doesn't say that on this slide, does 5:40PM<br/>2 it?</p> <p>3 A Well, they continued to develop the field<br/>4 and if was the case with mitigation, then the field<br/>5 wouldn't be developable. 5:40PM</p> <p>6 Q Okay. We can just set that aside because<br/>7 we know that Anadarko wrote this off.</p> <p>8 But in any event, below that it says,<br/>9 "Asphaltene deposition at the rate of<br/>10 2 barrels/20,000 barrels of oil flow." Right? 5:40PM</p> <p>11 A That's what it says, yes.</p> <p>12 Q Let's turn to the next slide.</p> <p>13 A Okay. Go ahead.</p> <p>14 Q Did you hear me?</p> <p>15 A Yes. I'm looking at mitigations now. 5:41PM</p> <p>16 Q Okay. This is after the slide we were<br/>17 just looking at; right? And the slide before was<br/>18 depicting the severity of the problem; right?</p> <p>19 A It was predicting the potential severity of<br/>20 the problem. 5:41PM</p> <p>21 Q Okay. And then now under the mitigation<br/>22 experience, it says that it has nine years of field<br/>23 experience; right?</p> <p>24 A Yes.</p> <p>25 Q Ten plus wells; right? 5:41PM<br/>Page 187</p>  | <p>1 A I'm trying to see where you read the second 5:42PM<br/>2 part from. I see, "Recent solvents are much more<br/>3 effective" and then I see, "Field trial for continuous<br/>4 inhibition planned for 2017."</p> <p>5 Q And the productivity index on this diagram 5:43PM<br/>6 is going down?</p> <p>7 A Productivity index will always go down as<br/>8 you produce a field, doesn't stay constant.</p> <p>9 Q It's depicting a downward arrow; correct?</p> <p>10 A Yes, but I mean, it would do that even if 5:43PM<br/>11 asphaltenes weren't there.</p> <p>12 Q Okay.</p> <p>13 A Productivity index always drops over time.</p> <p>14 Q This is Anadarko's track record; right?</p> <p>15 A This is a combination of their experience 5:43PM<br/>16 and what they plan to try to do, yes.</p> <p>17 Q And they are referring to field trials?</p> <p>18 A Yes.</p> <p>19 Q They still didn't have any proven<br/>20 strategies as of this time; correct? 5:44PM</p> <p>21 A Putting up a continuous chemical injection<br/>22 at the face of the reservoir is a proven technology,<br/>23 they just had not done it --</p> <p>24 Q Okay.</p> <p>25 A -- here. 5:44PM<br/>Page 189</p> |

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| <p>1 Q And this was the sum total of their 5:44PM</p> <p>2 mitigation success as they put it?</p> <p>3 A I think there was a number of things in</p> <p>4 their mitigation, one was investigating this, one was</p> <p>5 doing soaks and another one was actually if in the 5:44PM</p> <p>6 worst case actually having to intervene with coil</p> <p>7 tubing.</p> <p>8 Q And they found that the chemical</p> <p>9 injections were only 20 to 30 percent effective;</p> <p>10 right? 5:44PM</p> <p>11 A The chemical injection soaks, yes.</p> <p>12 Q Okay. You can set that aside.</p> <p>13 MS. JENSEN: You should be able to see</p> <p>14 what's been marked as Exhibit 536.</p> <p>15 And for the record, this is a document in 5:45PM</p> <p>16 native that was produced in this case with a Bates</p> <p>17 stamp APC-01677836.</p> <p>18 (Whereupon, Exhibit 536 was marked for</p> <p>19 identification.)</p> <p>20 BY MS. JENSEN: 5:46PM</p> <p>21 Q Have you seen this document before?</p> <p>22 A I'll look. I'm not sure if I've seen this</p> <p>23 exact presentation before. I may have seen it in a</p> <p>24 different form. But I do recognize a number of the</p> <p>25 slides. 5:47PM</p> <p style="text-align: right;">Page 190</p>   | <p>1 impairment, well failure examples; right? 5:48PM</p> <p>2 A Yes, there are examples of well failures.</p> <p>3 Q And one of those well failures is the K2</p> <p>4 and that was on account of asphaltene; correct?</p> <p>5 A Yes, before they did mitigation. 5:48PM</p> <p>6 Q This was an Anadarko well that you cited</p> <p>7 as a success?</p> <p>8 A No, I cited the field as a success, not one</p> <p>9 particular well. So they learned from that well and</p> <p>10 then they made changes to the way they operated the 5:48PM</p> <p>11 field.</p> <p>12 Q But this particle well, the K2 well failed</p> <p>13 because of asphaltenes?</p> <p>14 A K2 is a field, there's one well in the K2</p> <p>15 field. 5:49PM</p> <p>16 Q That failed --</p> <p>17 A K2 is not a well.</p> <p>18 Q -- because of asphaltene; right?</p> <p>19 A Yes.</p> <p>20 Q And then also Constitution was also a well 5:49PM</p> <p>21 impairment or well failure example due to</p> <p>22 asphaltene?</p> <p>23 A That's a -- Constitution in Ticonderoga are</p> <p>24 fields. And in those fields there was a well</p> <p>25 impairment, not necessarily a well failure but there 5:49PM</p> <p style="text-align: right;">Page 192</p>                               |
| <p>1 Q Okay. For the record, this is a 5:47PM</p> <p>2 PowerPoint presentation on "Shenandoah Field</p> <p>3 Development Flow Assurance - Dry Tree."</p> <p>4 A Correct.</p> <p>5 Q What's the difference between dry tree and 5:47PM</p> <p>6 wet tree?</p> <p>7 A A wet tree sits on the seafloor. And a dry</p> <p>8 tree sits at the surface above the ocean.</p> <p>9 Q Please turn to slide 7.</p> <p>10 A "Why Ability to Enter the Well is 5:47PM</p> <p>11 Necessary?"</p> <p>12 Q Okay. Do you see the second bullet there</p> <p>13 says, "Mixing of zones, cross flow may result in</p> <p>14 asphaltene destabilization, zone impairment</p> <p>15 resulting in productivity decline. Potential to 5:47PM</p> <p>16 lose recoverable reserves."</p> <p>17 And there is a number of historical well</p> <p>18 impairment or failures below that.</p> <p>19 A Yes, of which only two of them refer to</p> <p>20 asphaltene. One of them is wax paraffin, one is 5:48PM</p> <p>21 corrosion and one is sand.</p> <p>22 Q Okay. So I'll --</p> <p>23 A Those are all well impairments.</p> <p>24 Q Right. I'm not asking you to categorize</p> <p>25 them. These -- it says here these are well 5:48PM</p> <p style="text-align: right;">Page 191</p> | <p>1 was well impairment due to asphaltene, yes. 5:49PM</p> <p>2 Q And, likewise, Ticonderoga was also a well</p> <p>3 failure due to asphaltene; right? So there's not</p> <p>4 actually just two, it's three?</p> <p>5 A I believe they are a joint producing field. 5:49PM</p> <p>6 Q Okay. And are you saying that's just one</p> <p>7 well then?</p> <p>8 A I don't know exactly which well it is. They</p> <p>9 don't say which well here.</p> <p>10 Q Okay. 5:50PM</p> <p>11 A It would have been nice if they gave the</p> <p>12 well name.</p> <p>13 Q In any event, they don't say it and for</p> <p>14 purposes of this slide, at the time when they were</p> <p>15 looking at this, there were historical well 5:50PM</p> <p>16 impairment/well failure examples due to asphaltene;</p> <p>17 correct?</p> <p>18 A Yes, there are well failures if you don't</p> <p>19 take care of your well and you can see a bunch of</p> <p>20 reasons there why that can occur. 5:50PM</p> <p>21 Q Let's walk through some of the asphaltene</p> <p>22 mitigation strategies that you talk about in your</p> <p>23 report.</p> <p>24 You talked about chemical injection, we</p> <p>25 talked about that; right? 5:50PM</p> <p style="text-align: right;">Page 193</p> |

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| <p>1 A Yes, chemical injection -- I consider 5:50PM</p> <p>2 chemical injection to be a continuous injection at the</p> <p>3 well face.</p> <p>4 Q Coated tubing?</p> <p>5 A You can coat the tubing, you can buy special 5:51PM</p> <p>6 tubing that has coating on the inside that prevents</p> <p>7 asphaltene deposition from building up on it.</p> <p>8 Q And xylene soaks?</p> <p>9 A Xylene soaks were the examples that you</p> <p>10 showed there earlier where if you start to have -- you 5:51PM</p> <p>11 do nothing and if you start to have asphaltene</p> <p>12 deposition, you go down and basically try to wash it</p> <p>13 out with xylene.</p> <p>14 Q And production logging?</p> <p>15 A Production logging is when I put it as a 5:51PM</p> <p>16 mitigation, you want to do production logging so that</p> <p>17 you understand what's going on in your well.</p> <p>18 So that's -- when I say "mitigation,"</p> <p>19 information is power here. If you're having an</p> <p>20 issue, you don't want to wait until is so severe 5:51PM</p> <p>21 that it's difficult to solve. So production logging</p> <p>22 allows you to keep track of it.</p> <p>23 Q Use of completion equipment I believe you</p> <p>24 said was --</p> <p>25 A Right. That's the sliding sleeves, the 5:52PM</p> <p style="text-align: right;">Page 194</p> | <p>1 MS. JENSEN: For the record, this is a 5:53PM</p> <p>2 document that bears the Bates stamp APC-00011721.</p> <p>3 THE WITNESS: Okay.</p> <p>4 BY MS. JENSEN:</p> <p>5 Q Okay. If you'll take a look at -- you may 5:53PM</p> <p>6 need to zoom in here. I know I need to.</p> <p>7 So do you see this is an email from Nikhil</p> <p>8 Joshi to --</p> <p>9 A Yes.</p> <p>10 Q -- a number of people including Ms. Lea 5:54PM</p> <p>11 Frye and others with the subject "Shenandoah flow</p> <p>12 assurance report and impact on concept selection."</p> <p>13 A Yes.</p> <p>14 Q Okay. Now, if you'll turn to Page 10.</p> <p>15 A Okay. 5:55PM</p> <p>16 Q There is a discussion here in the context</p> <p>17 of Shenandoah about asphaltene mitigation in</p> <p>18 Section 3.3 of this memo.</p> <p>19 You see that?</p> <p>20 A Yes. 5:55PM</p> <p>21 Q Okay. And there's discussion about</p> <p>22 asphaltene precipitation in the reservoir, 3.3.1.</p> <p>23 And then there is a conclusion there which is</p> <p>24 underlined or underscored.</p> <p>25 And do you see that? 5:55PM</p> <p style="text-align: right;">Page 196</p>  |
| <p>1 smart completions, all of that technology. 5:52PM</p> <p>2 Q And so those were the mitigation</p> <p>3 strategies that you mentioned in your report;</p> <p>4 correct?</p> <p>5 A Yes. 5:52PM</p> <p>6 Q Do you know who the flow assurance</p> <p>7 engineer was at Anadarko?</p> <p>8 A I do not, actually. I probably saw their</p> <p>9 name once upon a time, but it wasn't a name I recall.</p> <p>10 Q Did you look at internal documents about 5:52PM</p> <p>11 what Anadarko knew at the time about mitigation</p> <p>12 strategies and how it might apply to Shenandoah?</p> <p>13 A I looked at some of their internal</p> <p>14 documentation, in particular I looked at some of their</p> <p>15 spreadsheets that define what their mitigation would 5:53PM</p> <p>16 be as a function of month and year just to understand</p> <p>17 how they were calculating costs, et cetera.</p> <p>18 Q But you didn't look at all the internal</p> <p>19 correspondence by the people who were responsible</p> <p>20 for it at the time? 5:53PM</p> <p>21 A I doubt I looked at all of them.</p> <p>22 MS. JENSEN: I've now pulled up for you</p> <p>23 what's been marked as Exhibit 537.</p> <p>24 (Whereupon, Exhibit 537 was marked for</p> <p>25 identification.) 1:33PM</p> <p style="text-align: right;">Page 195</p>                          | <p>1 A Not yet, I'm looking. Down at the bottom 5:55PM</p> <p>2 right before 3.3.2.</p> <p>3 Yes, I do see the part that's underlined.</p> <p>4 Q That part that's underlined says,</p> <p>5 "Therefore, water injection to maintain pressure 5:55PM</p> <p>6 cannot be considered as a reliable mitigation</p> <p>7 measure for asphaltene precipitation and deposition</p> <p>8 in the reservoir for concept selection." Correct?</p> <p>9 A That's what it says, yes.</p> <p>10 Q If you turn down to the next page, there 5:56PM</p> <p>11 is a discussion on -- this is Page 11 of the PDF.</p> <p>12 And it talks about solvents such as xylene.</p> <p>13 Do you see that?</p> <p>14 A Are you talking about the underlined part</p> <p>15 right before 3.3.3? 5:56PM</p> <p>16 Q Yes. But I'm talking about what is the</p> <p>17 context here.</p> <p>18 And the context is the xylene soaks that</p> <p>19 you were talking about; right?</p> <p>20 A Yes. 5:56PM</p> <p>21 Q He concludes, "Therefore, asphaltene</p> <p>22 squeeze and/or solvent stimulations are not a</p> <p>23 reliable method to mitigate asphaltene deposition</p> <p>24 near wellbore."</p> <p>25 Do you see that? 5:56PM</p> <p style="text-align: right;">Page 197</p> |



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| <p>1 A Yes. 5:56PM</p> <p>2 Q There's also --</p> <p>3 A Right below it, it says, "asphaltene</p> <p>4 deposition in the wellbore may be mitigated with</p> <p>5 chemicals but testing is required," on the same page. 5:57PM</p> <p>6 Q It says, "may be mitigated with chemicals</p> <p>7 but significant testing is required." And it also</p> <p>8 says that chemical injections are only partly</p> <p>9 effective in preventing deposition; right?</p> <p>10 A Yes -- well, I believe that's true, but I'm 5:57PM</p> <p>11 not sure where it says that, so...</p> <p>12 Q Okay. You remember that.</p> <p>13 It says that "Improved effectiveness is</p> <p>14 being pursued by developing new chemistries but such</p> <p>15 a technology should be considered as new and 5:57PM</p> <p>16 unproven." Right?</p> <p>17 A Yes, but this document is from 2014.</p> <p>18 Q Understood. This is at the time when they</p> <p>19 were deciding -- when they were appraising</p> <p>20 Shenandoah; correct? 5:58PM</p> <p>21 A Yes, I believe this is right around the time</p> <p>22 of Shen 3.</p> <p>23 Q I'm going to show you another document.</p> <p>24 MS. JENSEN: Let's go off the record.</p> <p>25 (Recess taken.) 5:58PM</p> <p style="text-align: right;">Page 198</p> | <p>1 inhibition." Right? 6:05PM</p> <p>2 A At this time in 2015, that may be true. I</p> <p>3 don't -- I'll take your word for it, but I don't know</p> <p>4 for a fact.</p> <p>5 Q But that's what Anadarko thought at the 6:05PM</p> <p>6 time?</p> <p>7 A That's what it says.</p> <p>8 Q Okay. So that means that on the reverse</p> <p>9 side of the coin would be that 70 to 80 percent of</p> <p>10 asphaltene deposition would not be inhibited; 6:05PM</p> <p>11 correct?</p> <p>12 A No, I don't think you can draw that</p> <p>13 conclusion, but...</p> <p>14 Q I mean, if it offers only 20 to 30 percent</p> <p>15 inhibition, that means the remainder would be what 6:05PM</p> <p>16 it doesn't inhibit; correct?</p> <p>17 A I'm not sure I understand what a percent of</p> <p>18 non-inhibition is. So I don't -- I don't -- without</p> <p>19 spending some time and understanding exactly what</p> <p>20 you're saying, that doesn't necessarily -- I can't 6:06PM</p> <p>21 comment on that. I don't know.</p> <p>22 That doesn't sound exactly right to me.</p> <p>23 But it's not an either/or.</p> <p>24 Q Okay. Well, let's I guess agree to</p> <p>25 disagree on that one. 6:06PM</p> <p style="text-align: right;">Page 200</p>                 |
| <p>1 THE VIDEOGRAPHER: Back on the record. 6:03PM</p> <p>2 It's 6:03 p.m.</p> <p>3 MS. JENSEN: You should be able to see in</p> <p>4 your Exhibit Share a document that has been marked</p> <p>5 as Exhibit 538. 6:03PM</p> <p>6 (Whereupon, Exhibit 538 was marked for</p> <p>7 identification.)</p> <p>8 MS. JENSEN: And for the record, this is a</p> <p>9 document produced in its native format in this case</p> <p>10 and the Bates number is APC-00044530. 6:03PM</p> <p>11 THE WITNESS: Yes, I see it, "Asphaltene</p> <p>12 Mitigation April 2015."</p> <p>13 BY MS. JENSEN:</p> <p>14 Q Okay. Do you recognize this document?</p> <p>15 You have seen this document before; right? 6:04PM</p> <p>16 A Yes, in fact, it has a -- I believe a -- you</p> <p>17 can tell there is a bunch of slides copied and pasted</p> <p>18 from a bunch of previous presentations, but yes.</p> <p>19 Q If you turn to slide 8 now, just again to</p> <p>20 orient us in time, this is now in 2015 and the 6:04PM</p> <p>21 heading here is "Asphaltene State of the Art";</p> <p>22 right?</p> <p>23 A Yes.</p> <p>24 Q If you go to the second bullet here, it</p> <p>25 says the "Best chemical offers only 20 to 30 percent 6:05PM</p> <p style="text-align: right;">Page 199</p>       | <p>1 A Okay. 6:06PM</p> <p>2 Q So the next heading, though, says, "Field</p> <p>3 plugging known to occur with best chemical." Right?</p> <p>4 A Yes, because they are talking about xylene</p> <p>5 washes. 6:06PM</p> <p>6 Q Okay. So plugging is still possible even</p> <p>7 with the best chemical at this time; right?</p> <p>8 A If -- yes, it's possible, if you wait too</p> <p>9 long.</p> <p>10 Q This is what the team is saying at the 6:06PM</p> <p>11 time; right?</p> <p>12 A Right. Right. But again, this is early in</p> <p>13 the project by the time they -- you can see a bunch of</p> <p>14 the slides in this that cut and pasted from previous</p> <p>15 slides. This is a pretty new thing that they are 6:07PM</p> <p>16 looking at in 2014 and '15. It isn't till later that</p> <p>17 they start kind of screwing down on exactly what their</p> <p>18 plan is.</p> <p>19 Q So the project started -- when did they</p> <p>20 discover Shenandoah? 6:07PM</p> <p>21 A Original discovery was in 2008 or '09.</p> <p>22 Q Now we're in 2015; right?</p> <p>23 A Yes, but there was a three-year delay due to</p> <p>24 Macondo, but yes.</p> <p>25 Q We'll just -- talk about the way time 6:07PM</p> <p style="text-align: right;">Page 201</p> |

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| <p>1 passes; right? 6:07PM</p> <p>2 So this is now 2015, that's a number of</p> <p>3 years after 2009; right?</p> <p>4 A That's true.</p> <p>5 Q More years between when it started and 6:07PM</p> <p>6 when they write the thing off in 2017; right?</p> <p>7 A There are more years -- there are years in</p> <p>8 between those things. Typical wells take anywhere</p> <p>9 from, to drill, three to six months, yes.</p> <p>10 Q Now, when a tube is plugged, the 6:08PM</p> <p>11 production has to stop for it to be cleaned out;</p> <p>12 right?</p> <p>13 A If it's completely plugged or even</p> <p>14 substantially plugged, then it has to be cleaned out</p> <p>15 usually by scraping. 6:08PM</p> <p>16 Q And requires production to be stopped in</p> <p>17 order to do so; correct?</p> <p>18 A Yes, for a short time. It doesn't take long</p> <p>19 to scrape the inside of a tube.</p> <p>20 MS. JENSEN: You should be able to see 6:09PM</p> <p>21 what I've marked as Exhibit 539.</p> <p>22 (Whereupon, Exhibit 539 was marked for</p> <p>23 identification.)</p> <p>24 MS. JENSEN: For the record, this is</p> <p>25 APC-00349108. 6:09PM</p> <p style="text-align: right;">Page 202</p>   | <p>1 Q And it goes into the frequency of each of 6:11PM</p> <p>2 these intervention types?</p> <p>3 A Under the assumptions, it talks about -- let</p> <p>4 me see. I don't see an intervention timeline or</p> <p>5 frequency here. I see that if you decide to 6:11PM</p> <p>6 intervene, that it takes three to six months to</p> <p>7 mobilize for a wet tree intervention, because it takes</p> <p>8 that long to get a drill rig there, and two to three</p> <p>9 months to mobilize a dry tree intervention because a</p> <p>10 cable -- or a coiled tubing intervention on a platform 6:12PM</p> <p>11 is a lot easier to get.</p> <p>12 But I don't see anything in here that says</p> <p>13 how often you would need to intervene, what the</p> <p>14 interval is or when it would even start. Because</p> <p>15 obviously you wouldn't have to start until the 6:12PM</p> <p>16 pressure dropped quite a bit.</p> <p>17 Q Let's turn back to the slide before that,</p> <p>18 slide 80.</p> <p>19 A Okay. There we go. Intervention or xylene</p> <p>20 soaks with a frequency of once every one to two years. 6:12PM</p> <p>21 Q Let's look at the coiled tubing CT clean</p> <p>22 out. Under there it says the "initial results</p> <p>23 indicate asphaltene deposition is a significant</p> <p>24 concern."</p> <p>25 Do you see that? 6:12PM</p> <p style="text-align: right;">Page 204</p> |
| <p>1 THE WITNESS: "Workshop Day 1: Reservoir 6:09PM</p> <p>2 Uncertainties, November 18, 2014."</p> <p>3 BY MS. JENSEN:</p> <p>4 Q You've seen this document?</p> <p>5 Do you see this document? 6:09PM</p> <p>6 A I'm looking to make sure I remember looking</p> <p>7 at this document. I'm not sure I remember every slide</p> <p>8 in it, but yes, I remember looking at it.</p> <p>9 Q So if you turn to slide 81, fast click.</p> <p>10 A How come you can't find anything interesting 6:10PM</p> <p>11 on slide 2 or 3?</p> <p>12 Q I don't know. But my finger is going to</p> <p>13 be tired after this.</p> <p>14 So turning to slide 81, this refers to the</p> <p>15 different intervention types with respect to 6:10PM</p> <p>16 asphaltene mitigation; correct?</p> <p>17 A Is this the one that says, "Preliminary</p> <p>18 Costs - Dry Tree versus Wet Tree"?</p> <p>19 Q Yes.</p> <p>20 A Yes. 6:10PM</p> <p>21 Q Okay. And these are the interventions</p> <p>22 that Anadarko was looking at at the time; right?</p> <p>23 A Yes, this is a version of that because the</p> <p>24 numbers tend to move around. But yes, this is</p> <p>25 actually probably one of the more recent versions. 6:11PM</p> <p style="text-align: right;">Page 203</p> | <p>1 A Yes. 6:12PM</p> <p>2 Q And the xylene soaks will allow frequency</p> <p>3 of one cleanout one to two years?</p> <p>4 A Yes.</p> <p>5 Q Now, under the xylene, that one assumes a 6:13PM</p> <p>6 frequency of once every three to 12 months?</p> <p>7 A Once pressure drops between AOP, yes.</p> <p>8 Q And then the acid stim/soak, that one</p> <p>9 frequency is once every one to two years?</p> <p>10 A Yes, but that's for scale deposition. That 6:13PM</p> <p>11 doesn't have anything directly related to asphaltenes.</p> <p>12 That's for something called scale.</p> <p>13 Q Okay. And then the production logging,</p> <p>14 that one there needs to be a tubing cleanout and</p> <p>15 that's once per year? 6:14PM</p> <p>16 A Yeah, for the first two years.</p> <p>17 Q Right.</p> <p>18 A That actually is coupled. And again, that's</p> <p>19 only in the case of commingling.</p> <p>20 Q At the time they were thinking they may 6:14PM</p> <p>21 need to do different zonal isolation completion</p> <p>22 scenarios; right?</p> <p>23 A They were considering that. I don't know if</p> <p>24 they ever landed on exactly how they would -- which</p> <p>25 zones they might commingle and which not because they 6:14PM</p> <p style="text-align: right;">Page 205</p>  |

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| <p>1 kept changing them and discussing which ones to do in 6:14PM</p> <p>2 which wells.</p> <p>3 Q Okay. Now, if you look at slide 81, it</p> <p>4 discusses the preliminary costs. We started looking</p> <p>5 at this before. 6:15PM</p> <p>6 A Yes.</p> <p>7 Q So there under the base case and the wet</p> <p>8 tree, the costs are over 40 million for each</p> <p>9 intervention?</p> <p>10 A Correct, that's because it's the cost of a 6:15PM</p> <p>11 drill rig to float out there and to be above the tree</p> <p>12 that's sitting on the seafloor. So you have to pay</p> <p>13 for the rig.</p> <p>14 Q Right. And then -- so that's -- during</p> <p>15 that time, during the intervention, there is no oil 6:15PM</p> <p>16 production at that time; right?</p> <p>17 A Most of that intervention time is getting</p> <p>18 things positioned. So during the intervention itself,</p> <p>19 there is no production. But interventions only take</p> <p>20 on the order of a few days. 6:15PM</p> <p>21 Q So I believe you mentioned earlier that</p> <p>22 Anadarko never really could decide on a mitigation</p> <p>23 strategy?</p> <p>24 A I think what they did is they had a</p> <p>25 portfolio of mitigations that they were going to 6:16PM</p> <p style="text-align: right;">Page 206</p>                     | <p>1 mentioned earlier? 6:18PM</p> <p>2 A Yes.</p> <p>3 Q Okay. And said that he was -- basically,</p> <p>4 "In short," he says, so now I'm quoting, "the tubing</p> <p>5 coating is not on the table for any of our wells 6:18PM</p> <p>6 today."</p> <p>7 Is this an email that you had looked at</p> <p>8 before you submitted your report?</p> <p>9 A No, I don't believe I saw this email.</p> <p>10 Q Okay. And you mentioned Typhoon in your 6:19PM</p> <p>11 report as an example of successful asphaltene</p> <p>12 mitigation; right?</p> <p>13 A Yes.</p> <p>14 Q Okay. Typhoon was a Chevron project?</p> <p>15 A Yes. 6:19PM</p> <p>16 Q They used coated tubing in that project?</p> <p>17 A They did, yes, they did use coated tubing in</p> <p>18 the project.</p> <p>19 Q Okay. And he's saying -- Joshi is saying</p> <p>20 that the tubing is still in the proof-of-concept 6:19PM</p> <p>21 phase; right?</p> <p>22 A Well, that may have been his awareness and</p> <p>23 his opinion. I happen to have been aware of coated</p> <p>24 tubings being used for -- before that. So he's aware</p> <p>25 of the one of Typhoon, but I was aware of others. 6:20PM</p> <p style="text-align: right;">Page 208</p>   |
| <p>1 consider, but since they didn't get to a final 6:16PM</p> <p>2 development plan, they didn't necessarily land on any</p> <p>3 of them, or maybe all of them. So...</p> <p>4 Q Okay.</p> <p>5 A By the way, these are all interventions, 6:17PM</p> <p>6 there isn't anything in there that's just like</p> <p>7 continuous injection. These are all if everything</p> <p>8 else fails and you have to intervene into the well,</p> <p>9 these are the possibilities you could do.</p> <p>10 MS. JENSEN: So there is no question 6:17PM</p> <p>11 pending, actually. Let me show you a document</p> <p>12 that's been marked as Exhibit 540. And for the</p> <p>13 record, this is APC-00052041.</p> <p>14 (Whereupon, Exhibit 540 was marked for</p> <p>15 identification.) 6:17PM</p> <p>16 THE WITNESS: Okay.</p> <p>17 BY MS. JENSEN:</p> <p>18 Q Now we're in late 2015; right?</p> <p>19 A Yes. So 2015, this is probably about the</p> <p>20 time -- this is pretty late. So this is Shen -- let 6:18PM</p> <p>21 me check the date on Shen 6.</p> <p>22 This is after Shen 5, before Shen 6.</p> <p>23 Q Okay. So if you look at Nikhil's email of</p> <p>24 October 21st, 2015, he says to Pat that they were</p> <p>25 pursuing the coating of the tubing that you 6:18PM</p> <p style="text-align: right;">Page 207</p> | <p>1 Q Right. He was saying at this point 6:20PM</p> <p>2 they're still trying to figure out if it's feasible;</p> <p>3 right?</p> <p>4 A Right. So he's not sure who to contact or</p> <p>5 how to -- according to the email I'm reading there, he 6:20PM</p> <p>6 didn't know who to contact or how to pursue it.</p> <p>7 Q He's saying at this point "the tubing</p> <p>8 coating is not on the table for any of our wells</p> <p>9 today." Right?</p> <p>10 A That's what he says, yes. 6:20PM</p> <p>11 Q You are aware that by June of 2016, the</p> <p>12 coated tubing was only listed as a backup mitigation</p> <p>13 candidate?</p> <p>14 A I haven't seen where it was listed as a --</p> <p>15 with the specific title "backup." But I know it was 6:20PM</p> <p>16 one that -- and you can see from there that was at</p> <p>17 least potentially available and being considered.</p> <p>18 Q By September 2016, coated tubing was not</p> <p>19 even in the running as a consideration for a</p> <p>20 mitigation strategy; right? 6:21PM</p> <p>21 A That email indicated that he was not</p> <p>22 considering it in the development strategy at that</p> <p>23 point in time, yes.</p> <p>24 Q Right. And a year later, it was not even</p> <p>25 a candidate at all for the mitigation; right? 6:21PM</p> <p style="text-align: right;">Page 209</p> |

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| <p>1 A At that time it was not a candidate. 6:21PM</p> <p>2 Q Okay. So at this point of late 2016,</p> <p>3 coated tubing was not a candidate. Chemicals only</p> <p>4 offered 20 to 30 percent innovation; right?</p> <p>5 A You're talking about xylene soaks, xylene 6:21PM</p> <p>6 soaks offered potentially somewhere around that</p> <p>7 according to their documentation.</p> <p>8 Q Okay. And according to their</p> <p>9 documentation, plugging could still occur with the</p> <p>10 best chemicals; right? 6:21PM</p> <p>11 A Under the right circumstances, with no</p> <p>12 pressure support and without the proper mitigation and</p> <p>13 intervention, then it would be possible that that</p> <p>14 could be a problem.</p> <p>15 Q An according to Anadarko's documents at 6:22PM</p> <p>16 that time, the technologies for mitigation were</p> <p>17 still new and unheard of then; right?</p> <p>18 A No, I don't think they were new and</p> <p>19 unproven. They were still exploring what all the</p> <p>20 possibilities were. Obviously they had already proven 6:22PM</p> <p>21 some of the mitigation strategies in other fields.</p> <p>22 Q So according to documents we saw, it was</p> <p>23 expressed that they were new and unproven; correct?</p> <p>24 A They felt some of them were unproven. But</p> <p>25 others they had already used in some of -- Anadarko 6:22PM</p> <p style="text-align: right;">Page 210</p> | <p>1 drop down. So you would have ample warning and you 6:24PM</p> <p>2 would never allow that to happen.</p> <p>3 MS. JENSEN: Okay. Let's take a break.</p> <p>4 THE WITNESS: How long?</p> <p>5 THE VIDEOGRAPHER: Off the record. It's 6:24PM</p> <p>6 6:24 p.m.</p> <p>7 (Recess taken.)</p> <p>8 THE VIDEOGRAPHER: We're back on the</p> <p>9 record. It's 6:41 p.m.</p> <p>10 BY MS. JENSEN: 6:41PM</p> <p>11 Q What tools are available to geophysicists</p> <p>12 to identify faults?</p> <p>13 A So faults can be -- for geophysicists, most</p> <p>14 faults that they identify are from their mapping of</p> <p>15 the seismic data where they look for discontinuities 6:42PM</p> <p>16 in the seismic as you move laterally.</p> <p>17 But geophysicists also use faults that are</p> <p>18 seen in wells and sometimes faults that are implied</p> <p>19 from -- faults that are implied from tops that are</p> <p>20 measured in wells. 6:42PM</p> <p>21 Q What is a coherence map?</p> <p>22 A Yes, a coherency map, also referred to as a</p> <p>23 dissemblance volume or -- basically you take a volume</p> <p>24 of seismic data, which is a sample, you know, every</p> <p>25 say 10, 15 feet by 100 feet by 100 feet. 6:43PM</p> <p style="text-align: right;">Page 212</p>  |
| <p>1 had also used in some of their other fields. 6:22PM</p> <p>2 Q The interventions could cost also up to</p> <p>3 \$40 million as we saw; right?</p> <p>4 A If you were going to have to mobilize a</p> <p>5 drilling rig for a wet tree entry, it could cost 6:23PM</p> <p>6 upwards of 40 to \$45 million, yes, or in that range.</p> <p>7 Q And even with that cost, the production</p> <p>8 could still be stopped; right?</p> <p>9 A Well, the -- you would only bring out that</p> <p>10 drilling rig if you wanted to prevent the production 6:23PM</p> <p>11 from being stopped. You would not allow the</p> <p>12 production to be stopped and then bring the drilling</p> <p>13 rig out.</p> <p>14 Q Right. And we talked earlier about the</p> <p>15 production stopping? 6:23PM</p> <p>16 A Yes, well, if the production stopped because</p> <p>17 the tubing had plugged up, then you would have to</p> <p>18 intervene in some way to clean that.</p> <p>19 Q And the production would be stopped during</p> <p>20 that time? 6:23PM</p> <p>21 A Oh, you mean in terms of production?</p> <p>22 Q Yes.</p> <p>23 A Yes, but you would know way before then if</p> <p>24 you were starting to run into a problem because the</p> <p>25 pressure would drop and your flow rates would start to 6:24PM</p> <p style="text-align: right;">Page 211</p>   | <p>1 You have this huge volume of data and you 6:43PM</p> <p>2 look at how similar the samples are laterally</p> <p>3 compared to each other.</p> <p>4 If they look very similar, in other words,</p> <p>5 you're looking at something where events are 6:43PM</p> <p>6 continuous, if it looks very similar, you get a very</p> <p>7 low value. So a high coherency.</p> <p>8 If they look very different because the</p> <p>9 event has been broken and there's something else</p> <p>10 juxtaposed against it, then the -- then the -- you 6:43PM</p> <p>11 would get a very low correlation.</p> <p>12 So you can generate an entire volume of</p> <p>13 these correlations or dissemblance. Then if you</p> <p>14 kind of draw a map or traverse or anything through</p> <p>15 that, you'll see where things look coherent and 6:44PM</p> <p>16 where they don't look coherent.</p> <p>17 That can sometimes be used to spot</p> <p>18 discontinuities in the data.</p> <p>19 Q And discontinuities also can be called</p> <p>20 faults; right? 6:44PM</p> <p>21 A Yes, discontinuities can be faults, they can</p> <p>22 be barriers, they can be seismic noise.</p> <p>23 Q Do anomalies -- I can't say that word.</p> <p>24 A Anomalies.</p> <p>25 Q Do anomalies on a coherency map indicate 6:44PM</p> <p style="text-align: right;">Page 213</p> |

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| <p>1 faults? 6:44PM</p> <p>2 A They may or may not. Usually what you would</p> <p>3 do is you would look at how those anomalies, how those</p> <p>4 incoherences map out. If the incoherence is a</p> <p>5 continuous set of discontinuities that can form a 6:44PM</p> <p>6 surface, then you would be more likely to interpret it</p> <p>7 as a fault.</p> <p>8 Q OBMI wireline logs, they can also identify</p> <p>9 faults; correct?</p> <p>10 A So the OBMI is a tool that goes in a well 6:45PM</p> <p>11 that looks basically at the layering of the sediment</p> <p>12 in a 3D sense around the wellbore. So if there is a</p> <p>13 discontinuity in that layering in a wellbore, then</p> <p>14 that will give you an idea of what that discontinuity</p> <p>15 is. 6:45PM</p> <p>16 But then you have to make an</p> <p>17 interpretation whether that discontinuity is a fault</p> <p>18 or is that discontinuity due to something else.</p> <p>19 Q You mentioned offset in your report. You</p> <p>20 know the concept of offset; correct? 6:45PM</p> <p>21 A Yes.</p> <p>22 Q So what magnitude of offset would be</p> <p>23 required to competently map a fault in the seismic</p> <p>24 data?</p> <p>25 A So in order to confidently map a fault from 6:46PM</p> <p style="text-align: right;">Page 214</p>   | <p>1 see that discontinuity, as I said, map out as a 6:47PM</p> <p>2 surface, so you would like to be able to extend it</p> <p>3 vertically up and down.</p> <p>4 So that's difficult to do with the data at</p> <p>5 Shenandoah. It's below salt, it's noisy, it has a 6:47PM</p> <p>6 lot of artifacts from the imaging that comes through</p> <p>7 the overlying salt.</p> <p>8 But there are some places where you think</p> <p>9 you might be able to interpret a fault.</p> <p>10 And so -- but there are also many places 6:48PM</p> <p>11 where faults were interpreted that were later proved</p> <p>12 to not exist. So you can be fooled.</p> <p>13 But yes, there are a couple of places</p> <p>14 where you could say, hey, I feel a little more</p> <p>15 confidence that there may be a fault there. 6:48PM</p> <p>16 Q Now, if a fault is identified in a</p> <p>17 borehole such as Shen 3 BP1 through logs or samples,</p> <p>18 that's also evidence of faulting; correct?</p> <p>19 A Usually you would only map it as a fault if</p> <p>20 you could tie it to an offset imaged in the seismic, 6:48PM</p> <p>21 right.</p> <p>22 So would you want confirmation between the</p> <p>23 two sets of data because the well does not tell you</p> <p>24 how much offset is on a fault, it just tells you</p> <p>25 there is a discontinuity. 6:48PM</p> <p style="text-align: right;">Page 216</p> |
| <p>1 the seismic data, you have to see that seismic data 6:46PM</p> <p>2 make a -- again, we talked about correlation, you</p> <p>3 would have to have a discontinuity in the seismic data</p> <p>4 as you move from one place laterally to the next.</p> <p>5 The seismic data is limited to a certain 6:46PM</p> <p>6 frequency content. And the frequency content gets</p> <p>7 lower and lower the deeper you go and if you go</p> <p>8 below salt.</p> <p>9 And so the frequency content is inversely</p> <p>10 proportional to what you can resolve. So the lower 6:46PM</p> <p>11 the frequencies, then you need a higher</p> <p>12 discontinuity in order to see it.</p> <p>13 So at Shenandoah, based upon the seismic</p> <p>14 data that I saw in the images, I estimated it would</p> <p>15 be very difficult to map any discontinuities which 6:46PM</p> <p>16 were smaller than, say, about 300 feet.</p> <p>17 Q So your testimony is that the magnitude of</p> <p>18 offset required to confidently map a fault is about</p> <p>19 300 feet?</p> <p>20 A To confidently map it. You might extend 6:47PM</p> <p>21 that down to 200 feet but with a lot less confidence.</p> <p>22 Q Okay. In the final interpretation do</p> <p>23 faults exceed that resolution?</p> <p>24 A Well, one of the other difficulties with</p> <p>25 interpreting faults down there is you would like to 6:47PM</p> <p style="text-align: right;">Page 215</p> | <p>1 So if you go through a fault or if you see 6:48PM</p> <p>2 a discontinuity, it could be a very small</p> <p>3 discontinuity or it could be a larger one. It's</p> <p>4 very difficult to tell.</p> <p>5 Usually you like to correlate it with 6:49PM</p> <p>6 something that you see on the seismic that gives you</p> <p>7 more reason to believe it's real and that it's</p> <p>8 substantial.</p> <p>9 Q If one fault is identified in a borehole</p> <p>10 such as it was in Shen 1 bypass 1, you wouldn't 6:49PM</p> <p>11 expect that to be the only fault in the area in a</p> <p>12 field as large as Shenandoah, would you?</p> <p>13 A So the faults are a result of what is going</p> <p>14 on with the basin.</p> <p>15 And so you would expect if there's any 6:49PM</p> <p>16 faulting for it to be different in different places</p> <p>17 of the basin.</p> <p>18 So, for instance, up very close to the</p> <p>19 salt where things are moving and there's -- the</p> <p>20 sands are thinner and the salt is moving, you would 6:49PM</p> <p>21 expect it to be a little more distorted and</p> <p>22 potentially faulted than you would in the middle of</p> <p>23 the basin which wouldn't have that.</p> <p>24 So if I see one fault, would I expect</p> <p>25 another, not necessarily. Faults are difficult to 6:50PM</p> <p style="text-align: right;">Page 217</p>                     |

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| <p>1 predict, so -- without actually seeing them and 6:50PM</p> <p>2 mapping them.</p> <p>3 But you certainly would not say if you saw</p> <p>4 one, you would at least consider the possibility</p> <p>5 that there may be others even if you could not map 6:50PM</p> <p>6 them.</p> <p>7 Q Do you agree that the north/south</p> <p>8 lineations in the Shenandoah coherency maps are</p> <p>9 faults?</p> <p>10 A I think some of them are likely to be 6:50PM</p> <p>11 faults.</p> <p>12 Q And are they normal or reverse faults?</p> <p>13 A Well, that's an interesting question. So a</p> <p>14 normal fault is one in which you have extension and so</p> <p>15 things slide apart. Reverse faults are when you have 6:50PM</p> <p>16 compression and they push one over the top of the</p> <p>17 other.</p> <p>18 And most of the faults you would expect in</p> <p>19 Shenandoah basin to be normal faults.</p> <p>20 But there are -- again, because the 6:51PM</p> <p>21 seismic data is so difficult, it's hard to tell for</p> <p>22 sure.</p> <p>23 There is the possibility that this basin</p> <p>24 may have a reverse fault in it. But there is no</p> <p>25 clear evidence indicating for sure that that's the 6:51PM</p> <p style="text-align: right;">Page 218</p>   | <p>1 So some of these faults, they may not 6:53PM</p> <p>2 extend down into the deeper part of the basin, they</p> <p>3 may not extend very far to the south.</p> <p>4 In fact, most of them were interpreted as</p> <p>5 when you got to an area where you could see a little 6:53PM</p> <p>6 bit better in the seismic, which was away from the</p> <p>7 northern edge, even then the faults were not drawn</p> <p>8 all the way across the basin.</p> <p>9 So no, not necessarily the faults don't</p> <p>10 have to extend very far. 6:53PM</p> <p>11 Q Well, would you expect for the faults to</p> <p>12 continue to the north into Shenandoah field proper?</p> <p>13 A You don't know. The reason I say that is</p> <p>14 because you have to extrapolate to the north and as</p> <p>15 you move out of the center of the basin and you go 6:53PM</p> <p>16 towards its edges, the amount of simple normal</p> <p>17 faulting and the shape of it obviously north to south</p> <p>18 could change.</p> <p>19 So if there is faulting there,</p> <p>20 understanding where it is becomes even more 6:54PM</p> <p>21 difficult.</p> <p>22 Q Let me ask you this: If -- the stress</p> <p>23 field affects the basin?</p> <p>24 A Yes.</p> <p>25 Q Well, then explain why the eastern field 6:54PM</p> <p style="text-align: right;">Page 220</p>  |
| <p>1 case. 6:51PM</p> <p>2 Q So if it's -- assuming it's a normal</p> <p>3 fault, what would that tell you about the</p> <p>4 deformation history of the Shenandoah basin?</p> <p>5 A Well, the Shenandoah basin is formed by -- 6:51PM</p> <p>6 all the sediments in Shenandoah basin were laid down</p> <p>7 flat or pretty close to flat on the seafloor.</p> <p>8 So as -- so the center -- the weight of</p> <p>9 the sediment at the center of that deposition</p> <p>10 started weighing the salt down that was underneath 6:51PM</p> <p>11 it and pushing the salt -- pushing it out of the way</p> <p>12 and causing it to flow laterally.</p> <p>13 So the center of the basin sank and</p> <p>14 additional sediments filled it up.</p> <p>15 So if I see normal faults, what it tells 6:52PM</p> <p>16 me is that the space -- the rate at which the salt</p> <p>17 is being pushed out is exceeding the rate at which</p> <p>18 the sediments can fill it in. So then the sediments</p> <p>19 start to slide into the center.</p> <p>20 Q So would the stress creating the faults 6:52PM</p> <p>21 south of the Shenandoah field likely include the</p> <p>22 entire basin even under the field?</p> <p>23 A Not necessarily because it depends on when</p> <p>24 the salt moved compared to when the sediment filled</p> <p>25 in. 6:52PM</p> <p style="text-align: right;">Page 219</p> | <p>1 area updip of Shen 3 would not have the same 6:54PM</p> <p>2 structural complexity as the western half of the</p> <p>3 field.</p> <p>4 A The western half of the field has a salt</p> <p>5 root, a salt face moving up against the sediments. 6:54PM</p> <p>6 The area where updip of Shen 3 are</p> <p>7 sediments that have just been laid over the top of</p> <p>8 that are truncated. So they are different stress</p> <p>9 areas. So I would expect them to be different.</p> <p>10 Now, what would the faulting look like in 6:55PM</p> <p>11 those areas and how much of it is there, as you get</p> <p>12 close to the salt base, I would expect more because</p> <p>13 that's because the stress will be higher.</p> <p>14 But without having evidence, it would be</p> <p>15 real tough to put any of that on a map. 6:55PM</p> <p>16 Q So in your report you talk about high</p> <p>17 confidence faults; right?</p> <p>18 A Yes.</p> <p>19 Q How do you as a geoscientist identify</p> <p>20 them? 6:55PM</p> <p>21 A Well, I looked at -- if I interpret an event</p> <p>22 and I see a discontinuity, I look to see if I can find</p> <p>23 evidence of that discontinuity below it, above it, and</p> <p>24 does that discontinuity extend, you know, laterally.</p> <p>25 If I can make sense of it so that I have a 6:55PM</p> <p style="text-align: right;">Page 221</p> |



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| <p>1 lateral surface that looks geologically reasonable, 6:56PM</p> <p>2 then I have a little more confidence in a fault like</p> <p>3 that.</p> <p>4 If I can only map a very short piece, you</p> <p>5 know, one event has some offset on it but the one 6:56PM</p> <p>6 below it and the one above it doesn't, or I can't</p> <p>7 map it very far, then I just have less confidence</p> <p>8 that I am mapping a fault and consider the</p> <p>9 possibility I'm just mapping noise.</p> <p>10 Q If you extrapolate from the high 6:56PM</p> <p>11 confidence faults in the basin, you can hypothesize</p> <p>12 as to the frequency of significant faults in the</p> <p>13 areas of poor seismic; right?</p> <p>14 A You could try to hypothesize it, but then</p> <p>15 it's just a hypothetical fault. 6:56PM</p> <p>16 Q It would be maybe less high confidence,</p> <p>17 but it would still be a methodology for identifying</p> <p>18 potential faulting?</p> <p>19 A Yes, usually faulting you cannot map or you</p> <p>20 cannot really identify, but you recognize there's some 6:57PM</p> <p>21 possibility of it.</p> <p>22 You usually try to deal with it in other</p> <p>23 ways. You either try to deal with it in terms of</p> <p>24 things like recovery factors and other ways rather</p> <p>25 than putting them on a map. Because the last thing 6:57PM</p> <p style="text-align: right;">Page 222</p> | <p>1 A Yes. 6:58PM</p> <p>2 Q What was Doug Shotts's method for adding</p> <p>3 faults to his simulation?</p> <p>4 A Doug Shotts did a number of simulations. He</p> <p>5 did an experimental model simulation that just 6:58PM</p> <p>6 arbitrarily put in many fault, less faults,</p> <p>7 north/south faults, east/west faults, so -- and he</p> <p>8 explored from a model perspective like what would the</p> <p>9 impact of severe faulting be compared to less</p> <p>10 faulting. 6:59PM</p> <p>11 So it wasn't based necessarily on data, it</p> <p>12 was just a model exercise.</p> <p>13 Q It was a commonly used modeling exercise;</p> <p>14 right?</p> <p>15 A I wouldn't say commonly used. It's one way 6:59PM</p> <p>16 to just explore as you -- as you get more information</p> <p>17 about a field, you get an idea of where do I sit</p> <p>18 within the range of possibilities; right. Do I sit</p> <p>19 with lots and lots of faults or do I sit with a few</p> <p>20 faults? So it gives you some idea of what kind of 6:59PM</p> <p>21 recovery factor to start using.</p> <p>22 Q You're aware that in Doug Shotts's</p> <p>23 simulation, there was a downside recovery factor</p> <p>24 with east/west faulting of 5 percent; right?</p> <p>25 A Well, it was more than just east/west, it 7:00PM</p> <p style="text-align: right;">Page 224</p> |
| <p>1 you want to do is put a fault on a map which will 6:57PM</p> <p>2 drive where you put wells and then find out it</p> <p>3 doesn't exist.</p> <p>4 Q What information is necessary to add</p> <p>5 faults in the simulation stage? 6:57PM</p> <p>6 A When you're doing reservoir simulation?</p> <p>7 Q Yes.</p> <p>8 A Usually when people do reservoir</p> <p>9 simulations, if there is a clear fault, they will</p> <p>10 build it into the reservoir model. 6:58PM</p> <p>11 If there's not a clear fault, most</p> <p>12 reservoir engineers I've worked with will experiment</p> <p>13 with putting in barriers and taking barriers out and</p> <p>14 looking at what the impact of such artificial</p> <p>15 barriers are. 6:58PM</p> <p>16 And that's pretty common. In fact, even</p> <p>17 after the field starts producing, if the reservoir</p> <p>18 model doesn't explain very well the production</p> <p>19 you're making, reservoir engineers just kind of</p> <p>20 arbitrarily put barriers in the reservoir model to 6:58PM</p> <p>21 try to make the production agree with the model.</p> <p>22 Q That's a common technique; right?</p> <p>23 A That's a common technique among reservoir</p> <p>24 engineers.</p> <p>25 Q Do you know who Doug Shotts is? 6:58PM</p> <p style="text-align: right;">Page 223</p>   | <p>1 was east/west and north/south faulting. East/west 7:00PM</p> <p>2 faulting would automatically imply that you had no</p> <p>3 aquifer support whatsoever because the aquifer has to</p> <p>4 move from -- the water has to move from the south to</p> <p>5 the north. 7:00PM</p> <p>6 So it automatically assumed no aquifer</p> <p>7 support and it had compartments, I believe, that</p> <p>8 were on either a 1-mile by 2-mile rectangle, the</p> <p>9 whole field into independent rectangles and then</p> <p>10 what would a recovery be. 7:00PM</p> <p>11 Q Are you aware of any of Anadarko's</p> <p>12 resource assessments including that -- Shotts's</p> <p>13 5 percent recovery factor?</p> <p>14 A Can you repeat the question?</p> <p>15 Q Yes, I may have asked it poorly. Let me 7:00PM</p> <p>16 try again.</p> <p>17 Are you aware of any of Anadarko's</p> <p>18 resource assessments that included Shotts's downside</p> <p>19 recovery factor case of 5 percent in the resource</p> <p>20 distributions? 7:01PM</p> <p>21 A No, but neither did I see anywhere his</p> <p>22 upside was 35 percent. So they tended to use and land</p> <p>23 on numbers in between those two.</p> <p>24 Q So the answer to my question is no; right?</p> <p>25 A Yes. 7:01PM</p> <p style="text-align: right;">Page 225</p>  |

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| <p>1 Q Looking at the -- I'm sorry, strike that. 7:01PM</p> <p>2 Did you look at the record on the water</p> <p>3 samples that were acquired from some of the wells?</p> <p>4 A I looked very briefly at the water samples</p> <p>5 acquired. 7:01PM</p> <p>6 Q And did you look at the salinities on</p> <p>7 Shen 3 and Shen 6 which were between 195,000 and</p> <p>8 240,000 ppm?</p> <p>9 A I remember that they were not that unusual.</p> <p>10 But yes, I remember they are in that range. 7:02PM</p> <p>11 Q Okay. Based on that range, would you</p> <p>12 expect the water samples to be from the same basin</p> <p>13 wide aquifer?</p> <p>14 A So water samples are -- in terms of their</p> <p>15 connectivity are usually based more upon pressure 7:02PM</p> <p>16 because the salinity in the water is going to vary</p> <p>17 depending on how close you are to the salt face and</p> <p>18 how connected you are on this as the -- how much of</p> <p>19 that particular reservoir in that area is actually</p> <p>20 touching salt. Because the salt dissolves back into 7:02PM</p> <p>21 the water.</p> <p>22 So if they were very close and they had</p> <p>23 different salinities, you might expect that they --</p> <p>24 at least at the highest levels, they might be</p> <p>25 different. 7:03PM</p> <p style="text-align: right;">Page 226</p> | <p>1 Q You are aware that Chris Camden, who we 7:04PM</p> <p>2 discussed earlier, used the Yucatan 2 gradient</p> <p>3 instead of the Shen 3 gradient; right?</p> <p>4 A At what point in time? Which well are you</p> <p>5 talking about? 7:04PM</p> <p>6 Q So this is in Pittinger's report at</p> <p>7 Paragraph 150.</p> <p>8 A I don't have a copy of Pittinger's report.</p> <p>9 But...</p> <p>10 Q You are aware of Chris Camden stating that 7:05PM</p> <p>11 "I'm using the Yuc 2 aquifer pressures to estimate</p> <p>12 OWCs. I don't think the Shen 3 aquifer is connected</p> <p>13 to the west side of the field."</p> <p>14 You're aware of that; right?</p> <p>15 A So now we're talking about at Shen 4. Okay. 7:05PM</p> <p>16 So after Shen 4, because of the difference in pressure</p> <p>17 of the oil column in Shen 4 sidetrack 1 and bypass</p> <p>18 versus Shen 2, which is the nearest oil well, then</p> <p>19 there was a question as to whether or not you should</p> <p>20 use the water pressures in Yucatan 2, which is 7:05PM</p> <p>21 actually closer but across the middle of the basin, to</p> <p>22 estimate the oil-water contacts at Shen 4 or whether</p> <p>23 or not you should use the Shen 3 pressure, which is</p> <p>24 all the way across to the east side of the basin.</p> <p>25 So that was a question and it made a 7:06PM</p> <p style="text-align: right;">Page 228</p> |
| <p>1 But the salinities can be different updip 7:03PM</p> <p>2 and still be the same well down dip.</p> <p>3 Q Do you agree that fluid density is the</p> <p>4 controlling factor in the normal hydrostatic</p> <p>5 gradient? 7:03PM</p> <p>6 A Yes.</p> <p>7 Q Now, the Shen 3 water gradients varied;</p> <p>8 correct?</p> <p>9 A The water gradient was measured in each of</p> <p>10 the Shen 3 sands and they were slightly different 7:03PM</p> <p>11 depending which sand you measured them in.</p> <p>12 Q So shouldn't those fluids have the same</p> <p>13 density, the .500 used by Anadarko to project the</p> <p>14 oil-water contact in Shen 2?</p> <p>15 A They should have a density which is at least 7:03PM</p> <p>16 similar. The actual projection depends more on -- it</p> <p>17 depends a little bit on pressure, but it obviously</p> <p>18 depends a lot on -- it depends a little bit on</p> <p>19 salinity.</p> <p>20 It depends more on pressure, what the 7:04PM</p> <p>21 pressure in those wells, in those aquifers were.</p> <p>22 But that's always taken into account, so when</p> <p>23 someone does the projection, they calculate the</p> <p>24 density of the water and they use that to project up</p> <p>25 to the density of the oil. 7:04PM</p> <p style="text-align: right;">Page 227</p>                                      | <p>1 slight difference in which one you used, but both of 7:06PM</p> <p>2 them are probably valid and the question is, which</p> <p>3 one do you think has better pressure connectivity to</p> <p>4 Shen 4?</p> <p>5 Q And what Chris Camden said was, "I don't 7:06PM</p> <p>6 think the Shen 3 aquifer is connected to the western</p> <p>7 side of the field"; right?</p> <p>8 A Yes, he said he doesn't think that. There</p> <p>9 is no evidence saying it is or it isn't.</p> <p>10 Q Let's turn to Paragraph 520 of your 7:06PM</p> <p>11 report.</p> <p>12 A "Structure Mapping."</p> <p>13 Q Yes. This is a quick side note, so the</p> <p>14 Figure 55 that we see there, is that the coherency</p> <p>15 map? 7:07PM</p> <p>16 A That is an extraction of a coherency map</p> <p>17 along a horizon that has been picked. So somebody has</p> <p>18 interpreted a horizon that they think corresponds to a</p> <p>19 marker in the field and then they have extracted the</p> <p>20 coherency value from the volume at that map. Yes. 7:07PM</p> <p>21 Q Okay. Let's look at the paragraph above</p> <p>22 that, 520.</p> <p>23 So you state in there that by this point</p> <p>24 of Shen 3, "the teams agreed there was evidence for</p> <p>25 both east/west and north/south faulting." Correct? 7:08PM</p> <p style="text-align: right;">Page 229</p>   |

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| <p>1 A Yes. 7:08PM</p> <p>2 Q You can set those aside.</p> <p>3 What is siderite?</p> <p>4 A What is what?</p> <p>5 Q Siderite? 7:08PM</p> <p>6 A Siderite?</p> <p>7 Q Did I say it wrong?</p> <p>8 A It's said right.</p> <p>9 Q Okay. You're going to have to fix the</p> <p>10 online Google pronunciation because they say 7:08PM</p> <p>11 "siderite."</p> <p>12 A Okay. I won't guarantee I'm right, but</p> <p>13 that's what I always heard it referred to as.</p> <p>14 Q Take that up with Google. I'm going to</p> <p>15 say it the wrong way. 7:08PM</p> <p>16 A That's fine.</p> <p>17 Q What is siderite?</p> <p>18 A Siderite is a mineral that is present in</p> <p>19 sediments and -- in certain sediments, so...</p> <p>20 Q Okay. What does the presence of siderite 7:09PM</p> <p>21 have to do -- or what does it have to do with fluid</p> <p>22 properties?</p> <p>23 A So usually minerals come out of -- are</p> <p>24 leached out of rocks when they flow.</p> <p>25 And so when you see a lot of siderite in a 7:09PM</p> <p style="text-align: right;">Page 230</p>  | <p>1 think that the oil that's in those reservoirs filled 7:12PM</p> <p>2 those reservoirs up and then did not subsequently</p> <p>3 move.</p> <p>4 MS. JENSEN: Okay. I've marked as an</p> <p>5 exhibit a document that bears the Bates stamp 7:12PM</p> <p>6 APC-00001505 and this is Exhibit 541. You should be</p> <p>7 able to see it.</p> <p>8 (Whereupon, Exhibit 541 was marked for</p> <p>9 identification.)</p> <p>10 BY MS. JENSEN: 7:12PM</p> <p>11 Q This is going to require some fast</p> <p>12 clicking.</p> <p>13 A Okay. September '13, so this must be post</p> <p>14 Shen 2. What slide are we going to out of 168?</p> <p>15 Q Let's look at slide 75. Apologies, 7:12PM</p> <p>16 slide 76.</p> <p>17 (Discussion off the record.)</p> <p>18 THE WITNESS: There it goes. It was just</p> <p>19 a pause in the computer. I'm up to 45 now.</p> <p>20 You said 70 what? 7:13PM</p> <p>21 BY MS. JENSEN:</p> <p>22 Q Seventy-six.</p> <p>23 A "Siderite replacement grains," yes.</p> <p>24 Q Do you take it from this slide that there</p> <p>25 was presence of siderite in both Shen 2 and Shen 1? 7:13PM</p> <p style="text-align: right;">Page 232</p>  |
| <p>1 well and it corresponds also to where there has been 7:09PM</p> <p>2 a significant distortion or an inconsistency in the</p> <p>3 sediment, that's part of what you would use to try</p> <p>4 to interpret a fault.</p> <p>5 Q Is it an indication of hydrocarbon 7:10PM</p> <p>6 migration?</p> <p>7 A So hydrocarbons migrate a number of ways.</p> <p>8 When hydrocarbons -- they can migrate along a fault.</p> <p>9 So it can be indicative of that.</p> <p>10 But hydrocarbons can also migrate 7:10PM</p> <p>11 vertically through poor seals, especially if the</p> <p>12 pressure differences are high. There is a number</p> <p>13 of -- and hydrocarbons can migrate laterally through</p> <p>14 reservoirs.</p> <p>15 There is a number of ways hydrocarbons can 7:10PM</p> <p>16 migrate. But it could be -- it's not the only</p> <p>17 indication of a hydrocarbon migration, but it could</p> <p>18 imply that.</p> <p>19 Q Let's turn to Paragraph 263 on Page 128 of</p> <p>20 your report. 7:11PM</p> <p>21 A Yes.</p> <p>22 Q Here you say that no siderite -- I think</p> <p>23 I'm saying it now right -- was detected at Shen 2?</p> <p>24 A Right. That was in the core analysis. So</p> <p>25 they didn't see any of it, so that would make you 7:11PM</p> <p style="text-align: right;">Page 231</p> | <p>1 A There are some there, but I don't think it 7:14PM</p> <p>2 was a substantial amount. Whenever you get a piece of</p> <p>3 core, you analyze all of the grains that are in it.</p> <p>4 But they note examples of it in the rock.</p> <p>5 Q So there was siderite in both Shen 2 and 7:14PM</p> <p>6 Shen 1; right?</p> <p>7 A There was some in there.</p> <p>8 Q All right. You can set that aside.</p> <p>9 Paragraph 730 of your report, which is now</p> <p>10 Page 344, you talk about slickensides; right? 7:14PM</p> <p>11 A Yes.</p> <p>12 Q Okay. Can you describe the difference</p> <p>13 between faults -- strike that.</p> <p>14 What are slickensides and how do they</p> <p>15 form? 7:15PM</p> <p>16 A It's a characteristic in the cuttings that</p> <p>17 imply that there has been movement of the grains</p> <p>18 against each other. And so it's usually indicative of</p> <p>19 some level of movement of grains as they slide past</p> <p>20 each other. So it could be indicative of a fault. 7:15PM</p> <p>21 Q So sometimes slickensides occur along</p> <p>22 fault planes?</p> <p>23 A Yes.</p> <p>24 Q Do they sometimes occur along fracture</p> <p>25 planes? 7:16PM</p> <p style="text-align: right;">Page 233</p> |

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| <p>1 A Yes, fractures and faults are, for the most 7:16PM<br/>2 part, used interchangeably. But yes, slickensides can<br/>3 be indicative of a fault or at least a discontinuity<br/>4 where one set of grains have slid against another.<br/>5 Q What are deformation bands in a rock? 7:16PM<br/>6 A So rocks can be deformed without actually<br/>7 breaking, right, without a fault, they can be bent.<br/>8 And so a deformation band is an area where<br/>9 the sediments have been bent or deformed, but they<br/>10 have not created any offset. So there is no faults. 7:16PM<br/>11 Q Does the formation of deformation bands<br/>12 require a significant offset along the plane in the<br/>13 deformation band?<br/>14 A It doesn't require any offset. If there<br/>15 were offset, then you would have a fault. So what the 7:17PM<br/>16 deformation band is, it's a zone which can extend<br/>17 laterally where the sediments have been deformed.<br/>18 They have been bent but have not broken.<br/>19 Q And slickensides impact fluid flow across<br/>20 the fracture or deformation band? 7:17PM<br/>21 A They can if you have a deformation band,<br/>22 then you've jostled the grains around and you've<br/>23 probably distorted and reduced the porosity space<br/>24 between the grains. And you may have made the path<br/>25 for which fluids need to flow more tortuous. 7:18PM<br/>Page 234</p> | <p>1 A Yes. 7:22PM<br/>2 Q All right. And do you see the various<br/>3 wells for Shen depicted here or some of the wells?<br/>4 A Yes, I see some actual wells and I see<br/>5 some -- I see some recommended locations. 7:22PM<br/>6 Q Okay. And you see a black line in this<br/>7 map that separates Shen 2 and Shen 3?<br/>8 A The northwest/southeast black gap, it's a<br/>9 gap in the map, that's why it's black. That gap that<br/>10 separates -- or that runs between Shen 3 and Shen 2, 7:22PM<br/>11 yes, that's a fault.<br/>12 Q Okay.<br/>13 A That's interpreted as a fault.<br/>14 Q Now, are the contours aligned on either<br/>15 side of the feature? 7:23PM<br/>16 A No, they -- well, no, they are not and no,<br/>17 they shouldn't be. Otherwise, there is no offset on<br/>18 the fault.<br/>19 Q Right. Now, you just answered my next<br/>20 question, which is: If the contours on other side 7:23PM<br/>21 of the line don't align, that means there's sediment<br/>22 that offset; right?<br/>23 A Right, there's offset here. You can -- the<br/>24 easiest place to look is since the contour interval is<br/>25 250 feet, every fourth one, I believe, they make a 7:23PM<br/>Page 236</p>  |
| <p>1 So deformation bands can serve as a 7:18PM<br/>2 partial barrier to fluid flow.<br/>3 Q I would like to show you a document. It's<br/>4 loading. It's still loading.<br/>5 A I'm clicking on it to see when it shows up. 7:19PM<br/>6 Q Okay.<br/>7 A Did you get it loaded?<br/>8 Q You should be able to see what has been<br/>9 previously marked as Exhibit 71.<br/>10 This is PDF of a PowerPoint presentation 7:20PM<br/>11 which bears the Bates stamp APC-00001146.<br/>12 A I can see it, a PowerPoint presentation from<br/>13 December 10th, 2014.<br/>14 Q Actually, this one because it's PDF, we<br/>15 can scroll down to slide 54. 7:21PM<br/>16 A Yes, indeed.<br/>17 Q Okay. So this is a slide showing the<br/>18 Lower Wilcox A; right, a map of the Lower Wilcox A?<br/>19 A Just a minute. I'm on lower Wilcox B, so I<br/>20 went one too many. 7:21PM<br/>21 Q Yes.<br/>22 A Lower Wilcox A, contour interval 250 feet.<br/>23 Q Okay. And just to double check, so on --<br/>24 so it's slide 54 even though it doesn't have an<br/>25 actual number on the PowerPoint. Okay. 7:22PM<br/>Page 235</p>  | <p>1 brighter blue line. 7:23PM<br/>2 So you can look up where it says 51 east<br/>3 and see that that line is -- when you go to the<br/>4 other side of the fault is north of that.<br/>5 So yes, there is an offset on this -- 7:23PM<br/>6 interpreted offset on this fault.<br/>7 Q Can you tell how much the offset is?<br/>8 A Well, the -- so the way to do the offset is<br/>9 you check from one side to the other side. So here it<br/>10 looks like about -- now it changes a little bit. 7:24PM<br/>11 So up to the north, it is around one and a<br/>12 half contours. Down to the south, it's only about<br/>13 one contour.<br/>14 So according to this map, up to the north<br/>15 it's about 400 feet and as I come further south, 7:24PM<br/>16 it -- by the time I get to the green, it's only<br/>17 about 50 to 100 feet and by the time -- then there<br/>18 are -- in the area where the two faults overlap, it<br/>19 changes again.<br/>20 But up where the reservoir is, it's 7:25PM<br/>21 probably somewhere between 2 and 400 feet.<br/>22 Q And that fault with that offset separates<br/>23 Shen 2 and Shen 3; right?<br/>24 A Yes, the way it's interpreted, yes.<br/>25 Q Again, we talked earlier about Chris 7:25PM<br/>Page 237</p> |

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| <p>1 Camden and in his email, but Shenandoah 3 was on 7:25PM</p> <p>2 which side of the field?</p> <p>3 A Shenandoah 3 is on the east side of the</p> <p>4 field. It's the little white X where it says WR 52</p> <p>5 Number 2 Appraisal. 7:26PM</p> <p>6 Q Right.</p> <p>7 A That's Shenandoah 3.</p> <p>8 Q And Chris Camden said he didn't think that</p> <p>9 the Shen 3 aquifer here on the eastern side of the</p> <p>10 field is connected to the western side of the field, 7:26PM</p> <p>11 and the western side of the field would be Shen 2;</p> <p>12 right?</p> <p>13 A Shen 2 is more a central field, but he said</p> <p>14 that, yes, that he wasn't sure that Shen 3 would</p> <p>15 necessarily in pressure communication with Shen 2. 7:26PM</p> <p>16 Q And he said it stronger than that; right?</p> <p>17 He said, I don't think the Shen 3 aquifer on the</p> <p>18 east side of the field as we're seeing this now is</p> <p>19 connected to the western side of the field which is</p> <p>20 where Shen 2 is? 7:26PM</p> <p>21 A Yes, I mean, he can say he thinks it, but he</p> <p>22 doesn't show any evidence one way or the other.</p> <p>23 Q You referred to Allan diagrams in your</p> <p>24 report; right?</p> <p>25 A Yes. 7:27PM</p> <p style="text-align: right;">Page 238</p>                          | <p>1 A Okay. What paragraph or what page? 7:28PM</p> <p>2 Page 86?</p> <p>3 Q Page 86, Paragraph 100 -- sorry, 191.</p> <p>4 A Yes.</p> <p>5 Q In this paragraph you're commenting on 7:29PM</p> <p>6 Dr. Merrill's report with respect to the P1 and P99</p> <p>7 in the MMRA distributions?</p> <p>8 A Yes.</p> <p>9 Q Have you ever heard of the paper by Rose &amp;</p> <p>10 Associates from 2001 on the risk analysis of 7:30PM</p> <p>11 exploration prospects?</p> <p>12 A Yes.</p> <p>13 Q What does that paper concern?</p> <p>14 A That paper concerns the statistical</p> <p>15 distribution of things such as volumes and other key 7:30PM</p> <p>16 parameters and builds on other suppositions that have</p> <p>17 been done in the past and still are that says that</p> <p>18 those must -- that those volumes lie along -- or that</p> <p>19 those likelihoods fall along a logarithmic curve.</p> <p>20 So if you were to plot in a logarithmic 7:30PM</p> <p>21 space P1, P10, P50, P90, P99, they would form a</p> <p>22 straight line.</p> <p>23 Q Okay. You should be able to see what's</p> <p>24 been marked as Exhibit 542.</p> <p>25 (Whereupon, Exhibit 542 was marked for 7:31PM</p> <p style="text-align: right;">Page 240</p> |
| <p>1 Q What is that? 7:27PM</p> <p>2 A It's a diagram you would make of the fault</p> <p>3 plane showing the juxtaposition of what's on one side</p> <p>4 of the fault to what's on the other side of the fault.</p> <p>5 Because in this area, for instance, in 7:27PM</p> <p>6 Shen 2, in an interval of, say, 2,000 feet,</p> <p>7 1,000 feet of it is hydrocarbon filled sand.</p> <p>8 If you were to go on the other side of</p> <p>9 that fault and move that down, say, 3, 400 feet,</p> <p>10 that means a bunch of those sands are still 7:27PM</p> <p>11 juxtaposed against each other across the fault.</p> <p>12 So an Allan diagram you usually use to try</p> <p>13 to estimate what sands might be juxtaposed across</p> <p>14 the fault.</p> <p>15 Q You're aware that Anadarko personnel 7:28PM</p> <p>16 talked about an Allan diagram project in the context</p> <p>17 of Shen?</p> <p>18 A They may have talked about it. I never saw</p> <p>19 an actual Allan diagram along any of these faults ever</p> <p>20 displayed. So they may -- if they did one, I never 7:28PM</p> <p>21 saw it.</p> <p>22 Q So let's turn to Page 86 of your report.</p> <p>23 You can set this aside.</p> <p>24 A I was going to slide it to 86.</p> <p>25 Q All done with that one. 7:28PM</p> <p style="text-align: right;">Page 239</p> | <p>1 identification.) 7:31PM</p> <p>2 THE WITNESS: Okay.</p> <p>3 BY MS. JENSEN:</p> <p>4 Q Is this the article or document you were</p> <p>5 just talking about? 7:31PM</p> <p>6 A Not sure if this is the article or not.</p> <p>7 This is a part of -- I was wondering if it was part of</p> <p>8 their manual where they talk about the -- I don't know</p> <p>9 if this is actually the document or if it's a chapter</p> <p>10 out of a manual. 7:32PM</p> <p>11 I haven't actually seen this very specific</p> <p>12 document before, but that's what it looks like.</p> <p>13 Q If you look at Page 26 of the article or</p> <p>14 otherwise, you can refer to Page 9 of the PDF.</p> <p>15 A Twenty-five -- 26, Table 6? 7:33PM</p> <p>16 Q Yes.</p> <p>17 A Okay.</p> <p>18 Q So are you aware that following the</p> <p>19 drilling of Shen 2, Anadarko's P10/P90 estimate was</p> <p>20 between 2.8 and 60? 7:33PM</p> <p>21 A I know it was big, but it was -- and which</p> <p>22 number was it you said was between 2.8 and 6.0?</p> <p>23 Q 2.8 and 6.0.</p> <p>24 A You're talking about the volumes in place?</p> <p>25 Q Yes, for the P10/P90 estimate. 7:33PM</p> <p style="text-align: right;">Page 241</p>                             |

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| <p>1 A Right. For volumes in place, right. Yes, 7:33PM<br/>2 that sounds about right.<br/>3 Q So looking at this table, Table 6, and how<br/>4 you described the certainty of the Shenandoah<br/>5 project, what is the range of the expected P10/P90 7:34PM<br/>6 ratio?<br/>7 A At -- at the drilling of Shen 2 or --<br/>8 Q Let's go along -- yes, at that time and<br/>9 then with each well after that.<br/>10 A Well, I don't know exactly following the 7:34PM<br/>11 well, but I know that Shen 2 was, for all practical<br/>12 purposes, its own exploration well because it was not<br/>13 connected and it saw a completely different section<br/>14 than Shen 1.<br/>15 So in a lot of ways, I would say based 7:34PM<br/>16 upon Shen 2, you know, that you would be in --<br/>17 somewhere between wildcat and known productive trend<br/>18 and potentially even rank wildcat in a proven trend<br/>19 given that they were -- where they were located, how<br/>20 they were exploring, so somewhere in that range. 7:35PM<br/>21 So somewhere between 10 and 220, if you go<br/>22 by their chart. And I'm not sure I agree with their<br/>23 chart in all cases. But if you use their chart,<br/>24 that's where I would expect you to be.<br/>25 Q So was there a development well drilled in 7:35PM<br/>Page 242</p> | <p>1 (Recess taken.) 7:37PM<br/>2 THE VIDEOGRAPHER: Back on the record.<br/>3 It's 8:01 p.m.<br/>4 BY MS. JENSEN:<br/>5 Q Dr. Detomo, if you could please turn to 8:01PM<br/>6 Paragraph 918 of your report.<br/>7 A Okay.<br/>8 Q It starts on Page 421 and ends on 422.<br/>9 A Okay.<br/>10 Q Are you with me? 8:02PM<br/>11 A Yes.<br/>12 Q All right. So in this paragraph you are<br/>13 criticizing Mr. Pittinger about economic<br/>14 calculations and as it starts on Page 422, you say<br/>15 that "information regarding fault 8:02PM<br/>16 compartmentalization was accounted for in explicit<br/>17 fault mapping and lower recovery rates (13.8 instead<br/>18 of 30 percent)."<br/>19 What did you mean by "13.8 instead of<br/>20 30 percent"? 8:02PM<br/>21 A Early on in the project, and according to<br/>22 the work done by the reservoir engineers, without any<br/>23 faulting at all, the estimation was because of the<br/>24 fluids and the porosity quality of the rock, that<br/>25 recovery efficiencies could approach over 30 percent. 8:02PM<br/>Page 244</p>  |
| <p>1 the Shenandoah basin prior to 2014? 7:35PM<br/>2 A In the Shenandoah basin? Prior to 2014, I<br/>3 don't recall the date that the Yucatan 1 or Coronado<br/>4 were drilled. So I don't remember if one of them were<br/>5 before that. 7:35PM<br/>6 The only other well that was obviously<br/>7 2008, 2009 was the Shen 1 well, but one I think<br/>8 evidence certainly at this point and after this was<br/>9 that those two wells were not connected, so they<br/>10 weren't ineffectively the same basin. 7:36PM<br/>11 Q Was there a step-out or extension well<br/>12 drilled in the Shen basin prior to 2014?<br/>13 A Other than Shen 1, Coronado or Yucatan?<br/>14 Like I said, I don't recall the exact date. I would<br/>15 have to look it up for when Yucatan 1 and Coronado 1 7:36PM<br/>16 took place.<br/>17 But even if those were before that, then<br/>18 that would only put you in the wildcat in known<br/>19 productive trend, right.<br/>20 So that would still put you in the 10 to 7:36PM<br/>21 120 range for volumes.<br/>22 MS. JENSEN: I would like to take a quick<br/>23 break.<br/>24 THE VIDEOGRAPHER: We're off the record.<br/>25 It's 7:37. 7:37PM<br/>Page 243</p>  | <p>1 So some of the very early volume estimates used 8:03PM<br/>2 recovery factors of around 30 percent.<br/>3 Once they became aware that there might be<br/>4 unmappable small-level faulting and other production<br/>5 issues, they lowered the recovery factor. And I 8:03PM<br/>6 believe one -- the last recovery factor I remember<br/>7 them using was 13.8 percent for the recovery factor.<br/>8 So that played into one of the components<br/>9 of the volume reduction.<br/>10 Q Okay. Now turning to your report at 8:03PM<br/>11 Paragraph 112, Page 43.<br/>12 A Yes.<br/>13 Q You state, "There is no universally<br/>14 accepted definition of net pay and there is no<br/>15 prescriptive method for evaluating it." 8:04PM<br/>16 Now, how would you define net pay?<br/>17 A A net pay is defined as the portion of an<br/>18 interval which has -- from which recoverable<br/>19 hydrocarbons can be extracted.<br/>20 And so in general, in an interval, some of 8:04PM<br/>21 it may be high-quality sand and some of it may be<br/>22 lower, some of it may be shales.<br/>23 So the net pay would then be an estimation<br/>24 of which part of it you can extract hydrocarbons<br/>25 from. 8:05PM<br/>Page 245</p> |



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| <p>1 Q And if there is no prescriptive methods 8:05PM</p> <p>2 for evaluating net pay, how did Anadarko calculate</p> <p>3 net pay?</p> <p>4 A Every petrophysicist who estimates net pay</p> <p>5 defines a cutoff as to what -- based upon their logs 8:05PM</p> <p>6 as to what level they think represents recoverable oil</p> <p>7 and based upon those logs below which they think would</p> <p>8 you not be able to recover the oil.</p> <p>9 So if you have any two petrophysicists</p> <p>10 evaluate the same well, you'll get slightly 8:05PM</p> <p>11 different answers.</p> <p>12 Q So you can't describe how Anadarko</p> <p>13 calculated net pay?</p> <p>14 A Sure, usually I can do it in technical</p> <p>15 terms. You take the gamma ray log, you go ahead and 8:06PM</p> <p>16 define on the gamma ray log what the shale --</p> <p>17 100 percent shale line is, what the 100 percent sand</p> <p>18 line is, use that to estimate net sand, then you go to</p> <p>19 the resistivity log.</p> <p>20 You use the resistivity log in order to 8:06PM</p> <p>21 find what the saturation of where the oils are and</p> <p>22 you create a cutoff on that that looks to be</p> <p>23 recoverable.</p> <p>24 And then you overlay the two and extract</p> <p>25 out the number of feet that you have within that 8:06PM</p> <p style="text-align: right;">Page 246</p> | <p>1 society would be an authoritative source on the 8:07PM</p> <p>2 definition on net pay; correct?</p> <p>3 A Yes.</p> <p>4 MS. JENSEN: Okay. No further questions</p> <p>5 at this time. 8:08PM</p> <p>6 Let's go off the record.</p> <p>7 THE VIDEOGRAPHER: We're off the record.</p> <p>8 It's 8:08 p.m.</p> <p>9 (Recess taken.)</p> <p>10 THE VIDEOGRAPHER: Back on the record. 8:08PM</p> <p>11 It's 8:08 p.m.</p> <p>12</p> <p>13 EXAMINATION</p> <p>14 BY MS. PHILLIPS:</p> <p>15 Q Thanks, Dr. Detomo. I just have a few 8:08PM</p> <p>16 questions for you.</p> <p>17 You were asked questions about when the</p> <p>18 company wrote down costs associated with Shenandoah.</p> <p>19 Do you recall?</p> <p>20 A Yes. 8:09PM</p> <p>21 Q When did the company write down costs</p> <p>22 associated with Shenandoah?</p> <p>23 A May of 2017.</p> <p>24 Q And are you expressing an opinion as to</p> <p>25 when the company made the internal decision to write 8:09PM</p> <p style="text-align: right;">Page 248</p> |
| <p>1 interval which corresponds to what you've defined as 8:06PM</p> <p>2 recoverable oil net pay.</p> <p>3 Q So is that how you would calculate it or</p> <p>4 is that how Anadarko calculated it?</p> <p>5 A That's how every petrophysicist calculates 8:06PM</p> <p>6 it. The only question is where do you decide to put</p> <p>7 those cutoff lines. And those are an interpretation</p> <p>8 or an estimation by the individual petrophysicist.</p> <p>9 Q And you're aware that the Society of</p> <p>10 Petroleum Engineers has a definition for net pay; 8:07PM</p> <p>11 right?</p> <p>12 A Yes.</p> <p>13 Q What's the definition under the Society</p> <p>14 for Petroleum Engineers?</p> <p>15 A I don't recall it off the top of my head. 8:07PM</p> <p>16 But it doesn't change my opinion because it amounts to</p> <p>17 what I just described, including the process about how</p> <p>18 you measure it.</p> <p>19 Q Even though you don't know what it is off</p> <p>20 the top of your head, you say it's the same as what 8:07PM</p> <p>21 you just said?</p> <p>22 A You asked me to tell you what the society</p> <p>23 says it is. I can't quote the society without looking</p> <p>24 it up.</p> <p>25 Q In any event, the definition for the 8:07PM</p> <p style="text-align: right;">Page 247</p>   | <p>1 down costs associated with Shenandoah? 8:09PM</p> <p>2 A No.</p> <p>3 MS. PHILLIPS: That's all for defendants.</p> <p>4 MS. JENSEN: We can go off the record.</p> <p>5 THE VIDEOGRAPHER: Off the record. It's 8:09PM</p> <p>6 8:09 p.m.</p> <p>7 (Proceedings concluded at 8:09 p.m. EST)</p> <p>8</p> <p>9</p> <p>10</p> <p>11</p> <p>12</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p style="text-align: right;">Page 249</p>   |

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| <p>1 I, LYNNE M. LEDANOIS, a Certified</p> <p>2 Shorthand Reporter of the State of California, do</p> <p>3 hereby certify:</p> <p>4 That the foregoing proceedings were taken</p> <p>5 before me at the time and place herein set forth;</p> <p>6 that any witnesses in the foregoing proceedings,</p> <p>7 prior to testifying, were duly sworn; that a record</p> <p>8 of the proceedings was made by me using machine</p> <p>9 shorthand which was thereafter transcribed under my</p> <p>10 direction; that the foregoing transcript is a true</p> <p>11 record of the testimony given.</p> <p>12 Further, that if the foregoing pertains to</p> <p>13 the original transcript of a deposition in a Federal</p> <p>14 Case, before completion of the proceedings, review</p> <p>15 of the transcript [ ] was [x] was not requested.</p> <p>16 I further certify I am neither financially</p> <p>17 interested in the action nor a relative or employee</p> <p>18 of any attorney or party to this action.</p> <p>19 IN WITNESS WHEREOF, I have this date</p> <p>20 subscribed my name.</p> <p>21 Dated: March 11, 2023</p> <p>22</p> <p>23</p> <p>24 <br/>LYNNE MARIE LEDANOIS</p> <p>25 CSR No. 6811</p> <p style="text-align: right;">Page 250</p> | <p>1 Ms. Rachel Jensen, Esq.</p> <p>2 rjensen@rgrdlaw.com</p> <p>3 March 11, 2023</p> <p>4 In re ANADARKO PETROLEUM CORPORATION SECURITIES LITIGATION</p> <p>5 March 9, 2023, Rocco Detomo, Jr. (JOB NO. 5781021)</p> <p>6 The above-referenced transcript has been</p> <p>7 completed by Veritext Legal Solutions and</p> <p>8 review of the transcript is being handled as follows:</p> <p>9 <input type="checkbox"/> Per CA State Code (CCP 2025.520 (a)-(e)) – Contact Veritext</p> <p>10 to schedule a time to review the original transcript at</p> <p>11 a Veritext office.</p> <p>12 <input type="checkbox"/> Per CA State Code (CCP 2025.520 (a)-(e)) – Locked .PDF</p> <p>13 Transcript - The witness should review the transcript and</p> <p>14 make any necessary corrections on the errata pages included</p> <p>15 below, notating the page and line number of the corrections.</p> <p>16 The witness should then sign and date the errata and penalty</p> <p>17 of perjury pages and return the completed pages to all</p> <p>18 appearing counsel within the period of time determined at</p> <p>19 the deposition or provided by the Code of Civil Procedure.</p> <p>20 <input type="checkbox"/> Waiving the CA Code of Civil Procedure per Stipulation of</p> <p>21 Counsel - Original transcript to be released for signature</p> <p>22 as determined at the deposition.</p> <p>23 <input type="checkbox"/> Signature Waived – Reading &amp; Signature was waived at the</p> <p>24 time of the deposition.</p> <p>25</p> <p style="text-align: right;">Page 252</p> |
| <p>1 NAME OF CASE: In re Anadarka Securities Litigation</p> <p>2 DATE OF DEPOSITION: 3/9/23</p> <p>3 NAME OF WITNESS: Rocco Detomo, Jr., Ph.D.</p> <p>4 Reason codes:</p> <p>5 1. To clarify the record.</p> <p>6 2. To conform to the facts.</p> <p>7 3. To correct transcription errors.</p> <p>8 Page ____ Line ____ Reason ____</p> <p>9 From ____ to ____</p> <p>10</p> <p>11 Page ____ Line ____ Reason ____</p> <p>12 From ____ to ____</p> <p>13</p> <p>14 Page ____ Line ____ Reason ____</p> <p>15 From ____ to ____</p> <p>16</p> <p>17 Page ____ Line ____ Reason ____</p> <p>18 From ____ to ____</p> <p>19</p> <p>20 Page ____ Line ____ Reason ____</p> <p>21 From ____ to ____</p> <p>22</p> <p>23</p> <p>24</p> <p>25 _____<br/>Signature of Deponent</p> <p style="text-align: right;">Page 251</p>   | <p>1 <input type="checkbox"/> Federal R&amp;S Requested (FRCP 30(e)(1)(B)) – Locked .PDF</p> <p>2 Transcript - The witness should review the transcript and</p> <p>3 make any necessary corrections on the errata pages included</p> <p>4 below, notating the page and line number of the corrections.</p> <p>5 The witness should then sign and date the errata and penalty</p> <p>6 of perjury pages and return the completed pages to all</p> <p>7 appearing counsel within the period of time determined at</p> <p>8 the deposition or provided by the Federal Rules.</p> <p>9 <input checked="" type="checkbox"/> Federal R&amp;S Not Requested - Reading &amp; Signature was not</p> <p>10 requested before the completion of the deposition.</p> <p>11</p> <p>12</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p style="text-align: right;">Page 253</p>   |

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| <p>1 In re ANADARKO PETROLEUM CORPORATION SECURITIES LITIGATION</p> <p>2 Rocco Detomo, Jr. (JOB NO. 5781021)</p> <p>3 ERRATA SHEET</p> <p>4 PAGE____ LINE____ CHANGE_____</p> <p>5 _____</p> <p>6 REASON_____</p> <p>7 PAGE____ LINE____ CHANGE_____</p> <p>8 _____</p> <p>9 REASON_____</p> <p>10 PAGE____ LINE____ CHANGE_____</p> <p>11 _____</p> <p>12 REASON_____</p> <p>13 PAGE____ LINE____ CHANGE_____</p> <p>14 _____</p> <p>15 REASON_____</p> <p>16 PAGE____ LINE____ CHANGE_____</p> <p>17 _____</p> <p>18 REASON_____</p> <p>19 PAGE____ LINE____ CHANGE_____</p> <p>20 _____</p> <p>21 REASON_____</p> <p>22 _____</p> <p>23 _____</p> <p>24 WITNESS _____ Date _____</p> <p>25 _____</p> |  |
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